TECHNOLOGY DEPT

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MAGAZINE

JANUARY 1954
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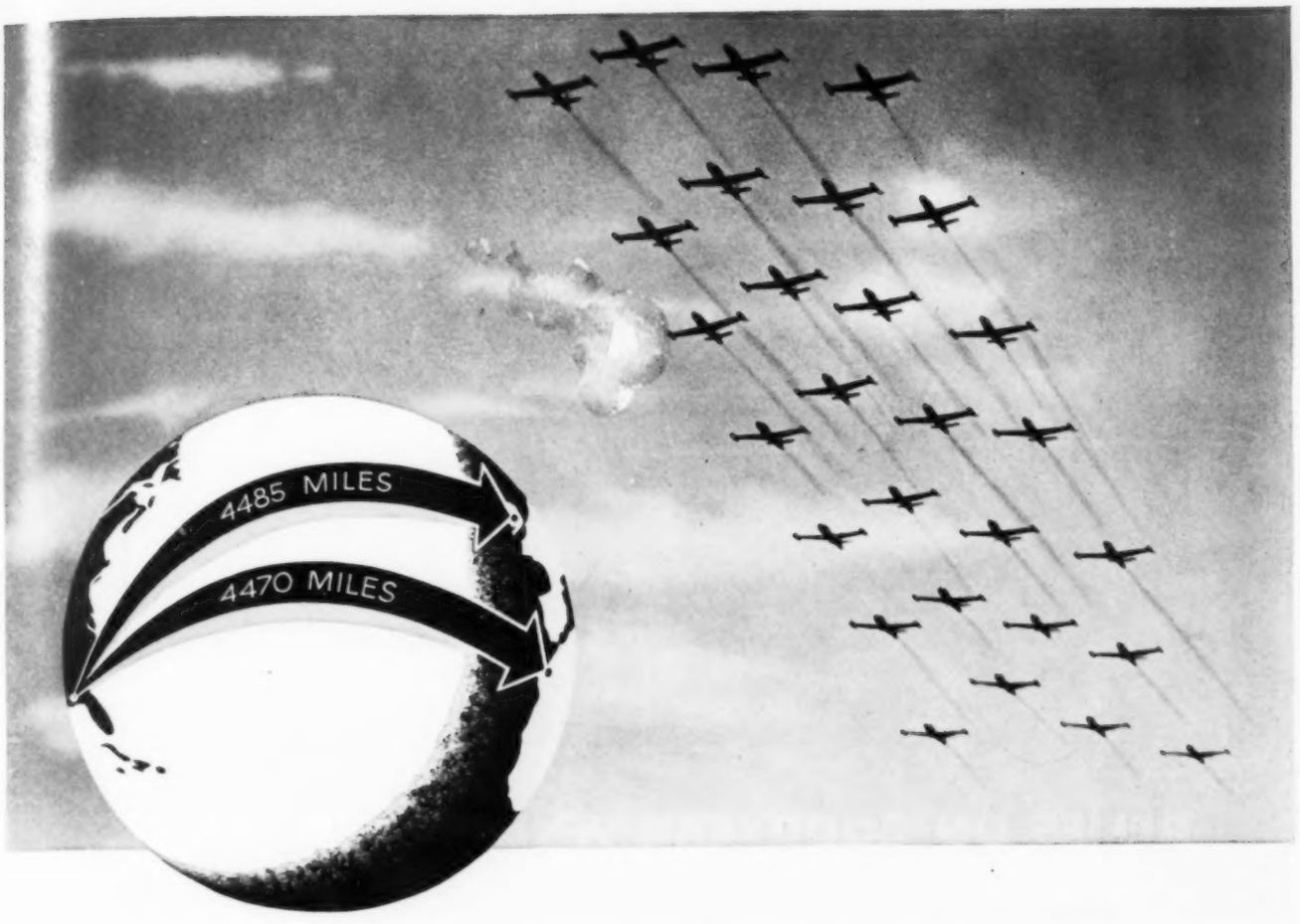
Tech



Longest nonstop Jet fighter flights

Colonel Dave Schilling's 31st Strategic Fighter Wing and the 508th Strategic Fighter Wing commanded by Colonel Cy Wilson have each set another American airpower record.

The 31st made their mass jet flight across the central Atlantic—4,470 miles over water from Turner Air Force Base in Georgia to Nouasseur, French Morocco.

The 508th flew 4,485 miles nonstop from Turner to Lakenheath, England – the longest transocean nonstop jet fighter flight ever made.

As in earlier record-breaking mass refueling flights, both wings flew Allison-powered Republic F-84G Thunderjets. The 508th was in the air 11 hours and 20 minutes; the 31st landed after 10 hours and 21 minutes.

Many Air Force men—crew chiefs, pilots, mechanics—helped write this U. S. jet fighter power record in the books. Their efforts, backed up by Allison's engineering, design and production skill, have scored another Allison power record in the air.

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Allison DIVISION OF GENERAL MOTORS, INDIANAPOLIS, INDIANA

World's most experienced designer and builder of aircraft turbine engines — *J35 and J71 Axial, J33 Centrifugal Turbo-Jet Engines, T38 and T40 Turbo-Prop Engines*

Again Goodyear comes to the fore—proves best in grueling tests!

FIRST choice of Douglas for the great new DC-7, Goodyear Wheels and Single-Disc Type Brakes are 100% standard equipment on the fastest nonstop, coast-to-coast commercial airliner.

Grueling field tests conducted by the C.A.A. and Douglas engineers proved the remarkable dependability of Goodyear-built main wheels, brakes and nose wheels for the new DC-7 — landing *full gross loads* time after time *well within* certified field lengths.

Flexibility of the Goodyear Brake design was responsible for the achievement of the high-torque design necessary to meet and *exceed* the Douglas field-test requirements.

So now the DC-7 joins the ranks of the nation's foremost commercial aircraft which rely on the time-proved dependability of Goodyear wheels and brakes—now flying on Consolidated 240's and 340's, the Martin 202, 404 and Lockheed's Constellations, as well as on the great forerunners of the new DC-7 — the DC-4's, 6's and 6B's. Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, Calif.

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SPERRY GYROSCOPE CO. whose name is synonymous with leadership in the field of aviation research and development throughout the world is operating two Aero COMMANDERS in their aviation department.

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Chance Vought puts the Navy in the Air
1917-1954

The name Chance Vought—a leader in the aircraft industry since 1917—has been synonymous with Naval Aviation for decades! The Navy's first aircraft carrier was equipped with Chance Vought VE-9's; a Chance Vought airplane was the first to be accepted by the Navy for regular service aboard battleships and cruisers; and Chance Vought was the first to produce a successful float monoplane for catapult operation. Photo below shows one of the early Vought seaplanes being launched from the U. S. S. Oklahoma.

CHANCE M. VOUGHT, as one of the early Wright pilots, began flying in 1910. He was a protege of Orville Wright and is shown here in one of the earliest Wright planes, in which he learned to fly. As he pursued the field of aeronautics, Chance Vought became one of the country's top-ranking airplane designers and builders.

THE F7U-3 CUTLASS, the Navy's new swept wing jet, produced by Chance Vought, was designed as a high-performance, hard-hitting carrier-based fighter.

Petroleum research has kept pace with the pioneering of new aircraft designs. Phillips Petroleum Company, one of the nation's largest producers of aviation gasoline for both military and commercial planes, is ready with new fuels for turbo-props and jets, in addition to its tremendous capacity for producing 115/145 grade aviation gasoline.

Think first of Phillips for the finest aviation products!

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AVIATION PRODUCTS

AIR Report
Significant Trends and News

A 400-LB. GROSS WEIGHT INCREASE GIVES THE RILEY TWIN NAVION CONVERSION A USEFUL LOAD OF MORE THAN 1,000 LBS., IN EXCESS OF ALL ACCESSORIES AND RADIO, according to Temco Aircraft Corp., which said a new 3,350-lb. gross weight has been approved for Riley Twins with landing gear and airframe modifications and powered with 150-hp. Lycoming engines. All Riley Twins now being converted carry the 3,350-lb. gross and Temco is performing the modifications in one week to Riley Twins already in use, and expects to cut this to 3 days by stockpiling replacement parts.

SPEED IN EXCESS OF 1,600 MPH. WAS REACHED ON DEC. 12 BY THE ROCKET-POWERED AIR FORCE BELL X-1A WITH MAJOR CHARLES E. YEAGER AS PILOT, exceeding by more than 300 mph. the previous fastest flight speed attained by U. S. research aircraft. Yeager became the first "supersonic man" on Oct. 14, 1947, in the Air Force Bell X-1, world's first supersonic airplane.

AIRWAY USER CHARGES FOR ALL AIRCRAFT, whether they use the airways or not, are being studied by CAA, which has suggested either raising the federal aircraft fuel tax to 4.5 cents or instituting a federal aircraft registration fee based on aircraft weight, such as $10 for airplanes of 1,500 lbs. gross weight or less, $25 for airplanes grossing 1,501-2,500 lbs., $50 for aircraft grossing 2,501-4,500 lbs., and 1 mill per gross ton-mile flown by all aircraft grossing over 4,500 lbs.

PRICE AND PERFORMANCE DETAILS OF THE NEW CESSNA TWIN were to be revealed at Cessna Aircraft Company's annual sales meeting for distributors and dealers in Wichita January 11.

THE COLLIER TROPHY HAS BEEN PRESENTED BY PRESIDENT EISENHOWER TO LEONARD S. HOBBS, vice president-engineering for United Aircraft Corp., for conceiving and directing the design of the Pratt & Whitney J-57 jet engine. In the 10,000-lb.-thrust class and called the world's most powerful production-model jet engine, the J-57 powers new jet bombers and supersonic fighters. Hobbs has been with Pratt & Whitney since 1927, is a graduate of Texas A & M College and served with the 42nd Rainbow Division in World War II.

INCREASED BUSINESS, AGRICULTURAL AND INDUSTRIAL FLYING was charted in 1952, according to CAA studies recently released, while instructional and pleasure flying dropped off. Business flying, accounting for 38.2 per cent of all non-airline flying, totalled 3,124,000 hrs. in 1952, a 6 per cent increase. Flying by companies amounted to 2,125,000 hrs., and that done by individuals in business flying totalled 999,000 hrs. Next largest category, pleasure flying, represented 1,629,000 hrs., a reduction of 13.4 per cent from 1951. Instructional flying dropped from 1,902,000 hrs. in 1951 to 1,503,000 hrs. Commercial agricultural flying, including dusting and spraying, gained 3.2 per cent to total 707,000 hrs., with non-airline for-hire flying such as passengers and cargo by fixed-base operators and irregular carriers but not military contract flying, totalled 703,000 hrs. for a 6.8-per cent gain. Industrial flying, including pipe line patrol, surveying and aerial advertising, gained 31.5 per cent and totalled 317,000 hrs. CAA obtained its figures from a mail and interview survey of owners of 7,000 aircraft. Testing, experimental, ferrying, and Civil Air Patrol flying totalled 203,000 hrs. Detailed analysis of the findings are to be published later in a CAA booklet, "Aircraft Use in 1952."

THREE BRAND-NEW ANDERSON-GREENWOOD AG-14 PUSHERS are being offered at $1,950 each by Anderson, Greenwood & Co., 1400 North Rice, Bellaire, Texas (Houston). These are 90-hp., 2-place, tricycle, all-metal CAA-certificated airplanes. They are currently licensed and have test time only.

LOCAL SERVICE AIRLINES BEGAN CARRYING FIRST CLASS MAIL and other classes of mail in addition to air mail during the Christmas holiday rush under CAB authorization. The Board proposed a rate of 30 cents per ton-mile and stipulated that the final rate to be paid would be effective only through January 11, 1954.

(Continued on page 24)

FLIGHT MAGAZINE

Including SOUTHERN FLIGHT and MODERN AIRPORTS

JANUARY, 1954 VOL. 41, No. 1

COVER: The improved de Havilland Dove "Executive" has more power, being equipped with new de Havilland Gipsy Queen 70 Mark 2 supercharged engines rated at 380 hp. each. With power increased from 680 to 760 hp., gross weight is upped from 8,500 to 8,800 lbs., for more payload or more range or a combination of both. Over 500 of the 185-mph. Doves are in worldwide use, about 70 of them in the United States.

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GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager, P. O. Box 750 (1901 McKinney Ave.), Dallas, Texas—Telephone STerling 2125. EASTERN ADVERTISING MANAGER: ELLIOTT J. FARRELL, Room 443 Chanin Building, 122 E. 42nd Street, New York City—Telephone Oxford 7-1973.

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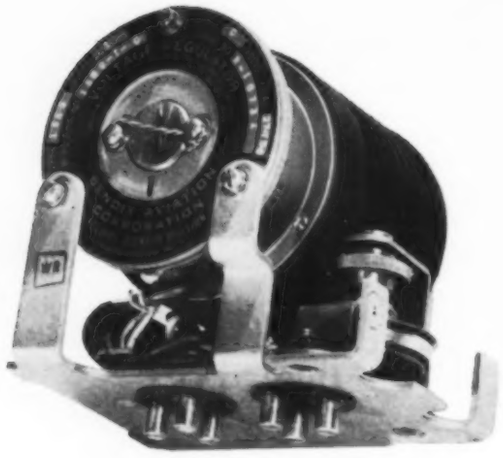


Model PERFORMANCE!

A Toast to an Eclipse-Pioneer 1589-1C carbon pile type voltage regulator. Now there's one for the New Year book! Even Auburn-Haired, Brown-Eyed, Sequin-Swathed, 25-Year-Old, 125-Lb., 5'5" Betty Williams seems a mite overcome by it all. Pilots, however, will be quick to admit that 1954 is the signal for doing away with unreliable 10-year-old war surplus in their aircraft and replacing it with Eclipse-Pioneer's latest accessories and instruments. The complete Eclipse-Pioneer line, factory-new and fully-warranted, is available through its distributor, the Southwest Airmotive Sales Department. SAC also is your authorized Eclipse-Pioneer service center.

Southwest Airmotive COMPANY
LOVE FIELD | DALLAS

Just among ourselves

END OF AN ERA

AVIATION'S golden anniversary year of 1953 probably will go down in history as one of the two or three truly great transitional years of the industry. For in 1953 the traditional U. S. Government attitude of friendly paternalism toward aviation gave way to forced self-sufficiency, marking the end of an era in which, since 1926, our national policy makers were determined to encourage and develop civil aviation as a matter of deep national interest.

Administrations have come and gone, basic laws have been revised and reorganizations have been frequent. But underlying every administration, every legislative document affecting aviation and practically every new policy, has been the age-old philosophy of "encouragement and development." That philosophy is now in the last throes of rigor mortis. The era of development has ended at the government level.

There are many people in aviation who view the matter with joy. There are others who feel that aviation progress and especially aviation safety will be placed in jeopardy. A purely objective view of the situation must admit that both good and bad will obtain from the new philosophy which says in effect that henceforth services to the industry will be reduced to a minimum and the industry must pay for those services that remain. The "Great White Father" in Washington has passed to the "Great Beyond."

The cataclysmic decimation of the Civil Aeronautics Administration is the best example of the new regime's revolutionary philosophy. We've had reorganizations of our Federal aviation agencies from the time they were established in the late twenties; but the major overhaul just performed by the new guard in Washington has no parallel in history. The CAA has been rapidly transformed into a tight little agency under strict control of the Department of Commerce, with little more to do than operate the Federal airways system. All other functions, particularly those of a developmental nature, have either been abandoned or else reduced to minor supervisory duties.

Likewise the same philosophy is in evidence within the Civil Aeronautics Board, where aviation development is rapidly giving away to self-sufficiency. The separation of subsidy from mail pay and the pressure to reduce or abandon scheduled air service to relatively low density areas point to an early revision downward of the local service airline experiment and perhaps the experimental helicopter services.

It is impressively clear that non-scheduled civil aviation — the business flier, the small operators, agricultural and industrial aviation, and the smaller communities — will suffer most from the new philosophy. The established air lines and the military services will go blithely along. When fees are assessed for using the Federal airways, it will be largely a matter of bookkeeping for the big airplane boys. But little aviation will take a real rap.

The economy moves threaten to reduce aviation safety. We recently observed a typical example of the new "economy" when a stand-by gasoline generator was ordered taken out of a surveillance radar station on a major U. S. airport. As every school child knows the stand-by generator is used when the main power source goes out, and power failures usually occur during storm conditions when the communications facilities are most needed. Yet this generator was removed, trucked to a warehouse 200 miles away, where it will be sold for less money than it would cost to operate it for ten or fifteen years!

Perhaps the greatest loss to aviation development will be the government career men whose long years of aviation experience have had so much to do in making the United States the envy of the world in commercial aviation enterprise. The economy axe has scattered them to the four winds. Henceforth civil aviation will be denied their experience, knowledge and above all their keen judgment in dealing with all sorts of technical matters peculiar to aviation. Even those who remain in the Federal agencies will have little opportunity to carry on the forward march of aviation progress. Reduced in rank, shuffled about into all sorts of new assignments, rooted out from what they thought were permanent homes, these old-timers whose combined experience is irreplaceable and could not be purchased at any price, have lost all incentive and initiative. They will spend their remaining days in bitterness and obscurity before retirement or finding a better job outside government service.

We have said before and say again that our Federal aviation agencies needed a house-cleaning. But the recent axe-swinging of the new Administration has gone far beyond an intelligent reorganization, in fact so far beyond that the Civil Aeronautics Act of 1938 has been abrogated and repealed by political fiat.

Our fragmented industry, divided against itself into little ineffectual self-interest groups, has been powerless to stem the tide or to force intelligent planning and action as regards civil aviation policy at the Federal level. As the new era begins we will start paying the price for our failure to agree among ourselves and our failure to stand and fight together for the principles and policies of earlier days when inspired aviation leaders wrote the laws and created the agencies that made the United States the only nation in the world where aviation has not been nationalized. ★ ★ ★

Airmen's Calendar

Jan. 25-29—IAS Twenty-Second Annual Meeting, Astor Hotel, New York.

Jan. 25—IAS Honors Night Dinner, Astor Hotel, New York.

Feb. 21-23—3rd Annual Texas Agricultural Aviation Conference, Sponsored by Texas A. & M. College, Texas Flying Farmers and Texas Aeronautics Association, College Station, Texas.

April 12-14—Airport Operators Council 7th Annual Meeting, Tampa, Fla.

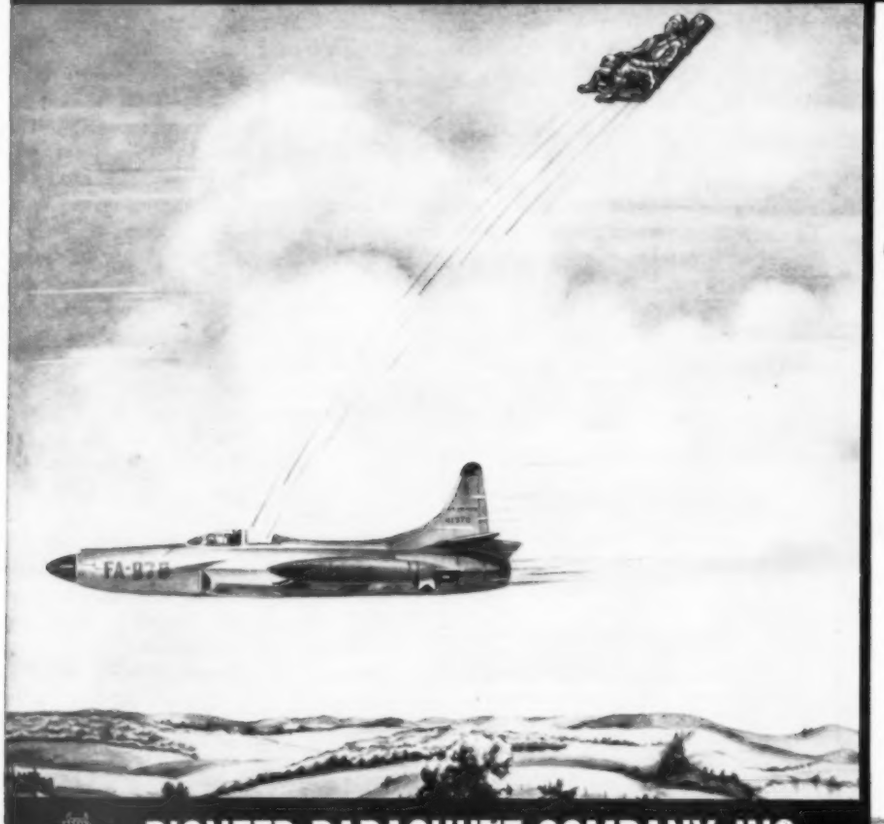
April 12-15—SAE Aeronautic Meeting, Production Meeting and Display, Statler Hotel, New York.

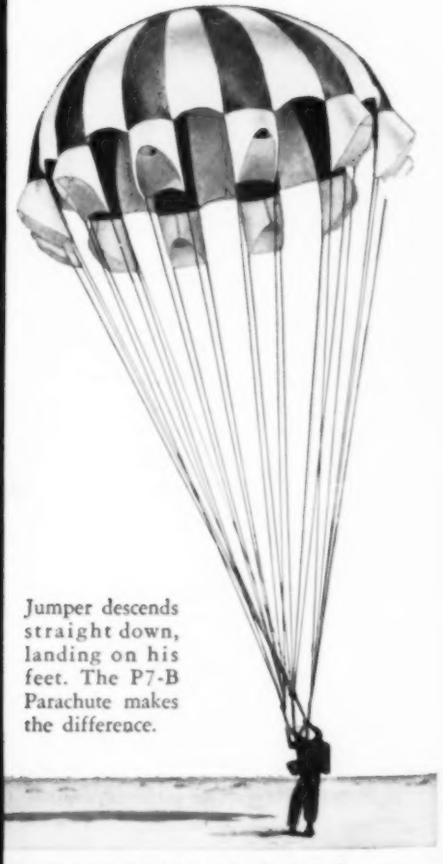
April 21-24—2nd Annual Student Paper Competition, Sponsored by Texas Section, Institute of Aeronautical Sciences, Melrose Hotel, Dallas, Texas.

Pioneer Ribbon Parachute used as air brake for Boeing Jet Bomber.

PIONEER PARACHUTES *give amazing* JET *performance!*

In aviation, the miracles of yesterday are routine today. Pioneer Ribbon Parachutes used for air brakes on jet planes as well as many other applications; the New P7-B* Guide Surface Personnel Parachutes are but two of the many types made by Pioneer which have established Pioneer's reputation as the world's Leading parachute designers and manufacturers!





Jumper descends straight down, landing on his feet. The P7-B Parachute makes the difference.

PIONEER PARACHUTE COMPANY, INC.

MANCHESTER, CONNECTICUT, U. S. A.

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**Patents applied for in U.S. and principal countries throughout the world.*

A new STAR in '54

Since the pioneering days of the aviation industry the name *Beechcraft* has stood for leadership in design. Such leadership is the product of vision, courage and skill; of seeing and planning for the future. In 1954 the **Beechcraft Model 50 Twin-Bonanza** will be added to the long list of famous Beechcrafts that have established an unparalleled record for safety, economy and performance down through the years.

If you are considering the purchase of a new airplane in the next twelve months we would like to suggest you let the *J. D. Reed Company* tell you more about the new **Beechcraft Model 50 Twin-Bonanza** and what it can do for you—you'll be glad you did.

J.D. REED CO. Inc.
SALES SERVICE
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DISTRIBUTOR
MUNICIPAL AIRPORT
HOUSTON, TEXAS

The 1954 model of Cessna's popular 225-hp., 4-place Model 180 has a distinctive new exterior paint design. Improvements include eight new changes in its Continental engine which make it smoother and quieter. An outside baggage door is standard equipment. Price is the same as last year, $12,950 flyaway Wichita, Kansas. —(Cessna Photo)

Cessna's Improved Model 180

Refinements have made a popular favorite better than ever for Cessna users

By GEORGE E. HADDAWAY

A COLD, penetrating, twenty-knot wind was blowing out of the north when Don Thrasher, public relations manager for Cessna, and the writer taxied out on Cessna Field at Wichita last month for an appraisal flight in what promises to be the company's big seller this year — the improved Model 180 for 1954.

"This baby will be airborne in 10 seconds," Thrasher boasted. "Fifty cents will get you a buck that it won't," we retorted.

We were off the ground in six and we gladly handed over the piece of cabbage. Though the two back seats were empty and we were not at full gross, the gas tanks were full, the special equipment was plenty and we had some 40 pounds of extra payload. The jack-rabbit take-off was unbelievably pleasant but it was soon eclipsed by the amazing climb which exceeded the company's claim of 1,150 feet per minute by about 40 per cent.

"What in the world has Continental done to this 0-470 engine?" we asked. "It's not only smoother and quieter but feels like it has more stuff than the advertised 225 horsepower."

"I don't know about additional horsepower," Don came back, "but eight brand new changes in the engine have made it smoother and reduced the noise level."

Perhaps the most impressive improvement over the old 180 is this reduction in noise level plus a very perceptible new smoothness which gives you the immediate reaction that Cessna engineers have really produced a new model, worthy of the designation. To our way of thinking the improvements are of such calibre as to put the new 180 into a different category from last year's model yet there's no increase in price. It will deliver from Wichita at the same $12,950 price tag for the standard model. In view of all the improvements this can be considered an actual price reduction, in line with the company's recently announced cut in price on the Model 170.

Redesigned crankshaft dampening and quieter exhausting through longer stacks account for the smoothness. A redesigned engine mount, improved breather installation, improved oil pressure regulation and a longer oil filler neck for easier filling are incorporated on the new Continental.

Old Cessna owners will be pleased that the new model will offer an outside baggage access door as standard equipment. Other improvements include a sloped map compartment to eliminate spilling of contents, provision for marker beacon switch on the instrument panel, redesigned control

FACTORY DATA
1954 Model 180 Cessna

Engine: Continental O-470, hp. at rpm.	225 at 2600
Top Speed, mph.	Over 165
Cruising Speed, mph.	Over 150
Cruising Range, hrs.	Over 4.5
Rate of Climb (sea level) fpm.	1,150
Service Ceiling, ft.	19,800
Gross Weight, lbs.	2,550
Empty Weight, lbs.	1,480
Useful Load, lbs.	1,070
Luggage Compartment Allowable Load, lbs.	120
Fuel Capacity, gals.	60
Span, ft.	36
Length, ft.	26
Height, ft.-ins.	7-6
Wing Area, sq. ft.	175
Wing Loading, lbs./sq. ft.	14.6
Power Loading, lbs./hp.	11.3

SEAPLANE

Same as landplane except as follows:

Top Speed, mph.	Over 145
Cruising Speed, mph.	Over 135
Rate of Climb (sea level), fpm.	940
Service Ceiling, ft.	16,500
Gross Weight, lbs.	2,700
Empty Weight, lbs.	1,670
Useful Load, lbs.	1,030
Wing Loading, lbs./sq. ft.	15.4
Power Loading, lbs./hp.	12.0

wheels, door handles and windshield defroster outlets. New soundproofing includes addition of carpeting over rudder pedal holes, insulated cabin air ducts, additional sidewall soundproofing from door posts forward to the firewall, sponge rubber mats under the scuff plates and a fine mohair antiglare insulation cover atop the instrument panel deck.

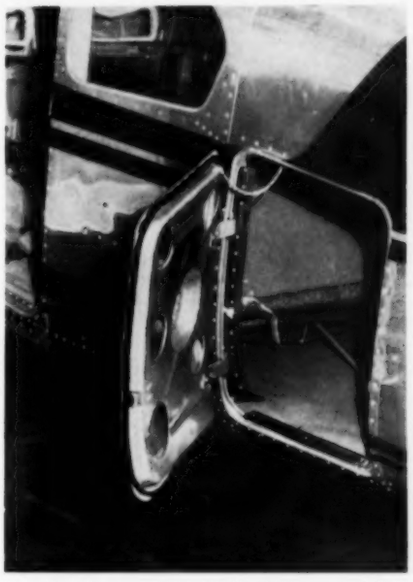
Reduction in drag has been accomplished by the completely adjustable horizontal stabilizer, like the ones used on jets to secure perfect trim regardless of load or power setting. Holes from flaps, ailerons and wing root fairing have been eliminated for smoother air flow, probably at the suggestion of Dr. August Raspet following his studies on other Cessnas at the Mississippi State College laboratories.

The standard model is equipped with the Hartzell prop. The one we flew had the new McCauley all-metal constant speed prop which can be had as extra equipment.

Apparently the Cessna interior designers and upholsterers decided to go all-out in attracting the eyes of discerning ladies. We are told they sometimes have a lot to say about the airplane the old man buys. Beautifully textured fabrics in pleasing color combinations reflect a knowledge of the best taste being used in the luxury class carriage trade. There are few airplanes today even in the twin-engine executive class that outstrip the new 180 in luxurious interiors.

We dare say this amazingly stable and quiet 1954 Model 180 is a few miles an hour faster than its popular predecessor of 1953, and in excess of the factory advertised figure of "over 150 mph." Some of our confirmed calculations at various power settings proved this point.

On the return home we departed from Bill Graham's private landing strip 8 miles east of the Cessna factory, flying direct to Amon Carter Field, an airline distance of 350 miles. With a moderate north wind at our tail we made the hop in 1 hour 44 minutes. The best airline time is via Convair with a stop at Oke City, at 1 hour 55 minutes. While our modern business airplanes are hardly competitive to scheduled airline transportation, since the airlines don't go everywhere one wants to, or to lots of places when one wants to go, you just can't help being impressed with the ever-increasing utility being engineered into all the new models for the private market. Nor can you help wondering, after experiencing a demonstration in the new vintage airplanes like Cessna's 180, why so many thousands of American businessmen wear themselves out along the dangerous, crowded highways across the length and breadth of the land. ★ ★ ★



Here's the new outside baggage door which is now standard on the Model 180. It permits easy loading of large articles without multiple handling through the cabin as in last year's model.
—(Cessna Photo.)

Model 170 Cessna for 1954

A PRICE reduction of $155 features the new 4-place, 145-hp., Cessna Model 170 for 1954, its standard-equipped price being $8,295 flyaway Wichita, Kansas.

Airframe and flight characteristics remain the same but new exterior paint design and interior colors and upholstering distinguish the new version from last year's model. The instrument panel provides recessed mountings for eight additional instruments plus two radios without sacrificing the glove compartment space. The rear seat can be removed in less than 10 minutes to provide space for bulky cargo.

FACTORY DATA
1954 Model 170 Cessna

Engine: Continental C-145, hp.	145
Top Speed, mph.	Over 140
Cruising Speed, mph.	Over 120
Cruising Range, hrs.	Over 4.5
Rate of Climb, fpm.	690
Service Ceiling, ft.	15,500
Gross Weight, lbs.	2,200
Empty Weight, lbs.	1,205
Baggage Compartment Allowable Load, lbs.	120
Fuel Capacity, gals.	42
Span, ft.	36
Length, ft.	25
Height, ft.-ins.	6-7
Wing Area, sq. ft.	175
Wing Loading, lbs./sq. ft.	12.6
Power Loading, lbs./hp.	15.2

SEAPLANE

Same as landplane except as follows:

Top Speed, mph.	Over 115
Cruising Speed, mph.	Over 100
Rate of Climb, fpm.	585
Service Ceiling, ft.	13,300
Gross Weight, lbs.	2,106
Empty Weight, lbs.	1,350
Wing Loading, lbs./sq. ft.	12.03
Power Loading, lbs./hp.	14.70

Executive DC-3 Convertible

An interesting corporate transport conversion for executives, cargo or both

By TOM ASHLEY

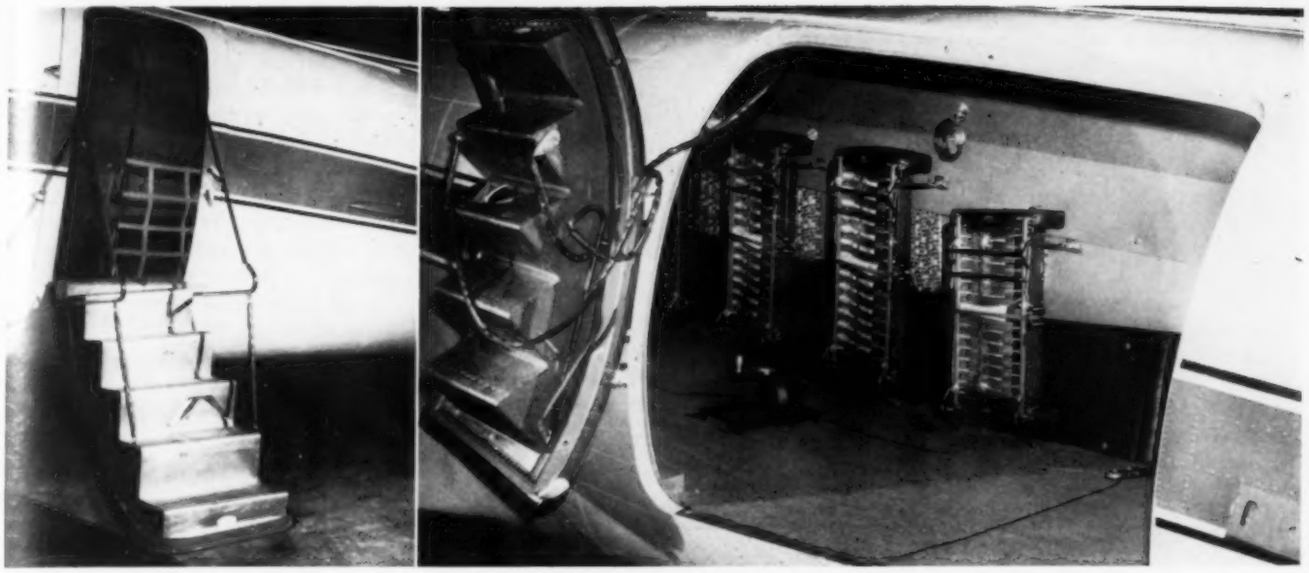
GETTING the most out of a corporate-owned multi-engine airplane involves problems which vary in complexity according to the kind of utilization desired. An interesting development is a definite trend now under way towards "convertibles" in Douglas DC-3's. It comes about like this: Sooner or later, the crew of a plush DC-3 comes face to face with some plain, ordinary freight which somebody wants to carry along, plush cabin notwithstanding. It may be crated machinery, some furniture, oil field equipment or even stores of food and supplies for a distant work camp. Whatever the case may be, expensively upholstered chairs and tables and carpets and walls can be easily damaged and tie-downs are make-shift at best, exposing the cabin to substantial damage in rough air.

A way out of this dilemma is the "convertible" executive ship. Four Douglas convertibles have now been produced by L. V. Emery's busy Executive Aircraft Service in Dallas at Garland Airport, which has probably turned out more corporate-owned multi-engine aircraft conversions than any operation in the world. Their fourth convertible DC-3 is their 95th custom conversion since war's end. The plane was delivered early in December to International Petroleum Company in South America.

International Petroleum already operates two Douglas B-23's and a Grumman Mallard. Excellent for passenger travel, these transports are lacking when it comes to hauling cargo. What was needed was a big cabin with a big door—not a pure freighter but a comfortable airplane which could be used primarily for passenger travel while lending itself to cargo when necessary. A DC-3 conversion was the answer, with Emery's custom convertible combining cargo accommodations and passenger plush without handicapping one or the other.

The photographs on these pages illustrate how Emery achieved an outstanding combination. The cabin has

Forward compartment in the International Petroleum DC-3 conversion shows six comfortable seats and two tables (left). Folded, these are up-ended to provide a large floor area for cargo. Carpet is rolled away for cargo. Note portable winch (right) which can be fastened to floor fittings at several locations and used to snake cargo along the floor.
—(Executive Aircraft Service Photos.)



Triple-feature cabin door is illustrated in the above photos. Three doors are shown—two cargo doors and, in one of them, a stair-door. At left, only the stair-door is open for use but at right both cargo doors are swung open, the left one carrying the stair-door. —(Executive Aircraft Service Photos.)

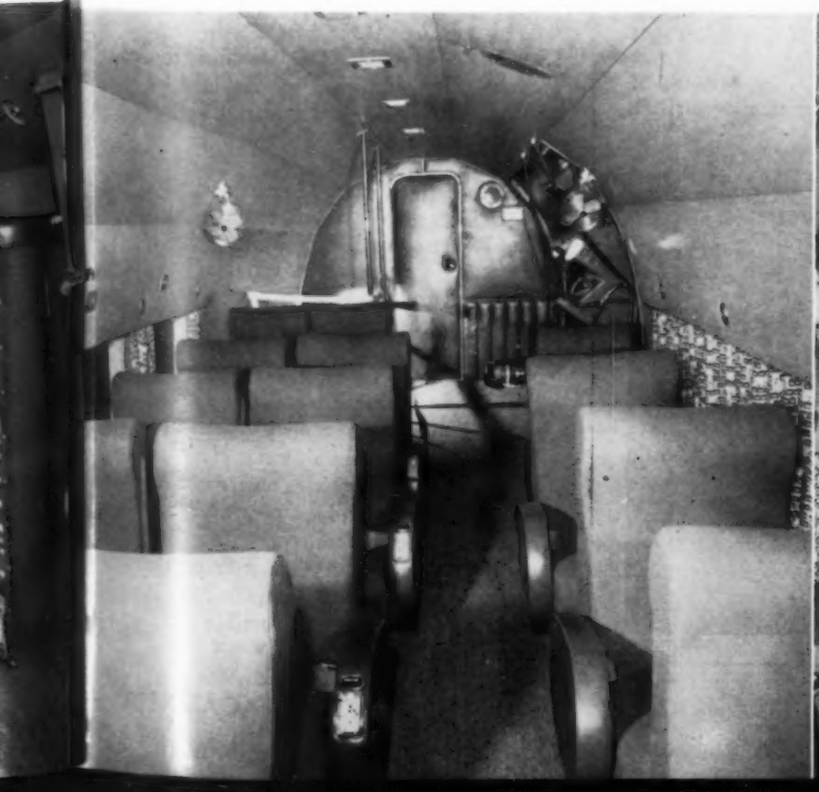
an easily removable bulkhead which provides two separate compartments. Six comfortable seats and two tables are in the forward compartment and there are 14 seats in the rear section. The seats, both singles and doubles, were produced by Aerosmith of Miami, Florida, and are cushioned with foam rubber and upholstered in durable nylon fabric. They fold out of the way easily, standing on end and fastened to the walls. This clears a large floor area for cargo and the carpet is designed for easy removal in rolls to bare a floor with numerous tie-down fasteners. The floor is the C-47 type stressed for cargo. One or a combination of any number of the seats can be folded out of the way as needed.

No ordinary freighter, the International Petroleum Douglas has numerous plush features in addition to the comfortable seats. These include decorative but durable wall and headliner coverings, a custom washroom and toilet, two large-capacity cabin blowers for ventilation in the tropics, decorative window curtains, a custom galley with dual food-warming ovens and thermos bottles, cold storage cabinet and other executive refinements.

Its cabin door offers both wide-span cargo opening and stair-step retractable passenger door. Before conversion, the airplane was a DC-3 airliner used in Hawaii. A C-47 cargo door was installed, with the left side being modified to take the stair-step passenger door. This left door swings out for cargo but down for passengers.

A hand-operated winch with cable

Interior scenes below are looking rearward (left) and forward in the main compartment, which seats 14 passengers. This airplane has heavy-duty cargo floor with many tie-down fittings under the carpet. Walls and headliner are of durable, easy-to-clean materials and seats are upholstered in easy-to-clean nylon material. Bulkhead is easily removed if entire cabin length is needed (note fittings exposed at right). Baggage rack with webbing (opposite door) is also removable. —(Executive Aircraft Service Photos.)



is carried aboard the airplane. It can be easily fastened to the floor at several stations to snake heavy cargo along the cabin floor, and it can be used to snake cargo up a ramp and into the cabin.

Neither is the convertible a freighter in performance. Emery has long-since specialized in high-performance DC-3 modifications, and the convertible features Pratt & Whitney R-1830-94 engines rated at 1,350 hp. each for take-off. Use of this power is approved because the airplane also has Emery's geared rudder trim tab modification. Also used is the AiResearch cowl-flap modification, which closes off the top side of the nacelle for better engine operating temperatures. Aiding in this are 12-in. oil coolers.

Quick gear retraction is provided by coupling both engine pumps to the landing gear system. Goodyear Super DC-3 wheels and brakes are used. Other executive refinements include sealed-beam landing lights, wing-fillet anti-icing fluid supply which is double the normal supply, newly-developed 5/8-inch bird-proof single-piece windshield, easy-eye safety glass cabin windows as used in autos, 200-amp. generators on each engine, custom fire detection and protection system, custom electrical and hydraulic systems, custom cockpit with complete instrumentation and Associated Radio installations, complete cockpit and cabin oxygen installation with 12-man-hour supply, liquidometer fuel capacity gauges which offer continuous readings without switching, Grimes rotating beacon light mounted on the tail fin and, something new—removable leading edges for the horizontal stabilizer to cope with damage from operating on graveled air strips.

"Most of our flying is from graveled or turf strips ranging from 2,400 to about 5,000 ft. and situated at elevations from sea level to 6,500 ft.," said Ernest Valdez, chief pilot for International Petroleum. "We also use the world's highest airport at La Paz, which is 13,500 ft. above sea level and has a 16,000-ft. runway.

"We expect to have a single-engine ceiling of 14,500 ft., and need every bit of it because our operations take us into areas with 18,000-ft. mountains. It's the *caballos* which count and those engines give us 1,350 *caballos* apiece."

Valdez said his B-23's are operated about 100 hrs. monthly and he expects to use the DC-3 every bit as much. "Cargo is involved in serving our drilling and seismograph operations," he said. "We will usually carry passengers, but when cargo shows up we can handle it with our convertible cabin. This cargo will include such things as replacement parts, crated equipment, supplies in general and the usual paraphernalia associated with oil country exploration and development. Some of our trips will be to and from the States on rush assignments, the use of the airplane giving us great savings in expensive oil field operations which might otherwise be delayed in emergencies."

His convertible DC-3 will gross 26,900 lbs., having a useful load of more than 7,000 lbs. It has 820-gal. fuel capacity.

Three other DC-3's have been modified by Emery for convertible operations similar to those for which the International Petroleum ship is intended. Two of them are already at work in South America. The other one is working in oil country operations in Sumatra.

Emery believes these four convertibles have established a definite trend in the development of corporate-owned multi-engine aircraft. His shop expects to be turning out more of them in ratio to plush passenger aircraft than heretofore.

"If anything can demonstrate the usefulness of DC-3 conversions in business flying, the convertible can," Emery said. ★ ★ ★

Pratt & Whitney's J-57 Jet

THE most powerful Pratt & Whitney turbo-jet engine yet announced is the new J-57, shown above with air intake at left and exhaust at right and shown below from the front with company officials. Left to right are Wright A. Parkins, P&W engineering manager; Leonard S. Hobbs, United Aircraft Corp., vice president for engineering, and William P. Gwinn, P&W general manager.

The J-57 is in the 10,000-lb. thrust class. Pratt & Whitney says it has the lowest specific fuel consumption of any turbo-jet engine presently in production for the U. S. Air Force. The axial-flow J-57 features an arrangement of dual compressors and has been in production since February, 1953. It powers the Boeing B-52 Stratofortress, which used pre-production engines on its first flight in April, 1952; the North American F-100 Super Sabre, first USAF operational fighter to fly faster than the speed of sound in level flight, and the Convair F-102, also supersonic. The F-100 is equipped with an afterburner, developing about 15,000 lbs. of thrust. The J-57 will also power the McDonnell F-101 and Navy aircraft.

Gwinn said he believes the J-57 is at least two years in advance of any other engine he knows of in the turbo-jet field, including British jets. ★ ★ ★

Fairchild's Jet Airliner

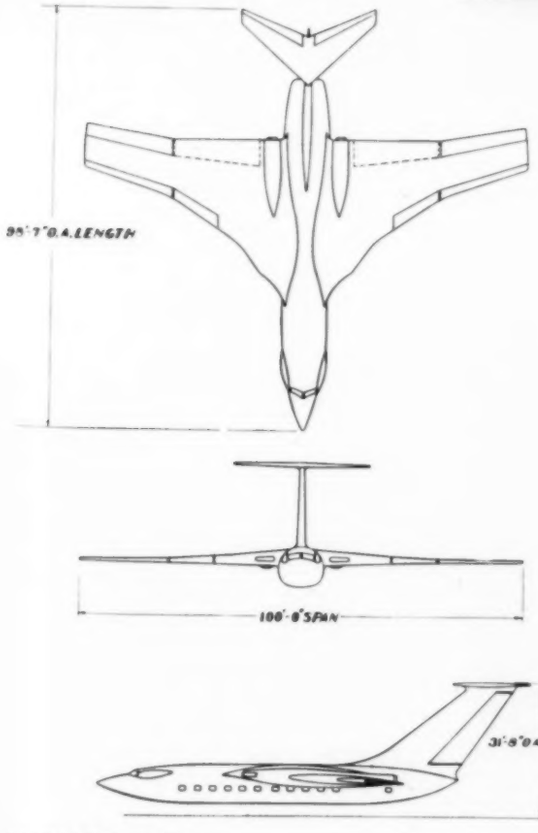
AN interesting twin-jet transport for commercial sales is being developed by Fairchild Engine and Airplane Corporation in a $1,500,000 research program which also includes a military turbo-prop transport for operation from unimproved fields.

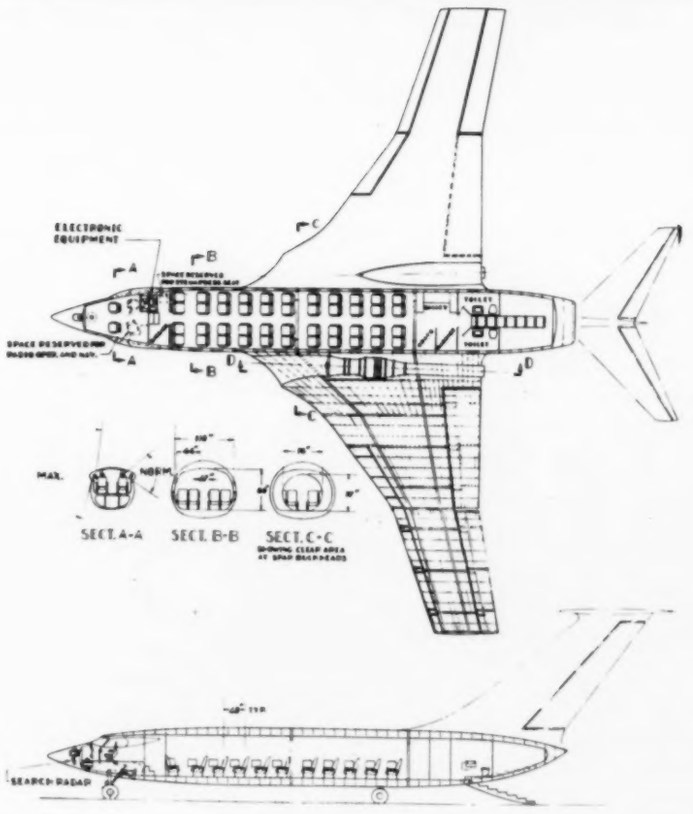
Some of the design details of the commercial proposal, designated as the Fairchild M-186, have been disclosed to airline representatives by Walter Tydon, Fairchild's chief design engineer. It is a high-wing, pressurized-cabin transport with 75,000-lb. gross weight for 44 to 64 passengers, powered by two Wright J-67 turbo-jet engines which Fairchild said will develop a minimum of 12,000 lbs. of thrust. Design cruising speed is placed at 570 mph. Payload for a cargo version is 35,000 lbs.

The M-186 would have a normal operating range sufficient for one-stop transcontinental airline service but

(Continued on page 30)

Twin-jet Fairchild features "cusp" wing, integral passenger ramp in tail and horizontal tail surface atop the vertical fin. Design cruising speed is 570 mph. for 75,000-lb. gross weight.





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Only transport helicopter now licensed by CAA, Sikorsky S-55 is 10-place, 600-hp., single-rotor machine with 6,900-lb. gross weight and 2,350-lb. useful load. New York Airways S-55 is shown at left, with Sabena Belgian Air Lines S-55 above. Los Angeles Airways also operates S-55's, and National Airlines recently placed an S-55 in experimental service at Miami—first trunk airline to do so.

Sikorsky Sales and Service

SIKORSKY Aircraft has 27 of its S-55 transport helicopters in commercial service. What the number will be within a year is anybody's guess. Sikorsky officials consider the commercial sales market for transport helicopters a live thing and a due portion of management effort is devoted to it.

Of the 27 S-55's now in commercial service, 11 are operated by American concerns, the remainder overseas. Six haul passengers exclusively, five are in the mail-cargo-passenger business, four are strictly cargo vehicles, three carry mail, one is owned by a manufacturing licensee, one is used as a flying laboratory and another as an executive transport. The rest are operated by the military or allied services of foreign governments.

On Sikorsky books are firm orders for at least ten more.

Although the number of S-55's (the only CAA-certificated transport helicopter) in commercial service represents substantial leadership in the transport helicopter field, Sikorsky management is first to point out it's a conservative — but impressive — beginning.

The largest single fleet of S-55's — five — is operated by New York Airways which in October observed its first anniversary. New York Airways offers passenger service between the three major metropolitan airports — Idlewild, LaGuardia and Newark. In addition, it flies mail and cargo routes extending outward from New York to Bridgeport, Connecticut, and several communities in New Jersey as well as intermediate stops en route.

Offering only passenger service is Sabena Belgian Air Lines. Operating three seven-passenger S-55's, Sabena services a heavily-populated 200-mile area. Using Brussels as the hub, the S-55's fly to France, Germany, Holland and Luxemburg in addition to stops in Belgium itself. In its first three months Sabena carried nearly 4,000 helicopter passengers — the majority using the service to hookup with Sabena's overseas flights.

Using three S-55's plus three of the earlier S-51's Los Angeles Airways has conducted uninterrupted helicopter mail service in Southern California for the past six years. Flying day and night, LAA makes some 100 delivery and pickup stops each day. Although certificated for passenger service, LAA has not yet engaged in that end of things.

In October, 1953, National Airlines took delivery of an S-55 to conduct experimental passenger service in several Florida communities. National is the first trunk-line air carrier to enter the helicopter field.

In Canada, S-55's operated by Okanagan Airways, Limited, have enabled construction men and geodetic crews to operate in mountainous areas heretofore impassable to vehicles of any kind. The Hudson Bay Mining and Smelting Company, Limited, uses an S-55 for similar geodetic work. Recently a Hudson Bay spokesman claimed the S-55 this season enabled a crew to do in one year work which normally took three. Ambank Airlift, Limited, has an S-55 available for cargo charter — the first service of its type to be offered.

The Sperry Corporation flies an S-55 as an airborne laboratory for study of certain flight equipment. Rockwell Manufacturing Company uses its S-55 as an executive transport enabling top management to supervise dispersed corporate manufacturing divisions.

Canada, Great Britain, Japan, Argentina and France each have one or more S-55's operated by military or other government services.

Even though S-55's in commercial service add up to several million in sales dollars it still is only a beginning.

Price of the basic commercial S-55

(Continued on page 26)

Bell helicopter was first to be licensed commercially by CAA in 1946. Since then, 272 non-military Bells have been delivered, including a fleet operated in rugged British Columbia by Okanagan Air Service as shown above at construction camp in take-off from small pad just large enough for Bell's dimensions.

Servicing of Bell Model 47 in world-wide use has been constantly improved by factory innovations. Here is interchangeable Bell power pack now offered Bell operators.

Bell Helicopter Sales and Service

SINCE it delivered its first commercial helicopter late in 1946, when its design became the first helicopter licensed by the Civil Aeronautics Administration with an approved type certificate, Bell Aircraft Corporation has led the world in commercial helicopter sales. It has delivered 272 non-military rotorcraft as of October 1, 1953, and its commercial helicopter sales have totalled something like $10,000,000, of which 25 per cent represents billings for spare parts.

Bell's commercial helicopter sales are summarized like this:

Year	Deliveries	Billings	Spares
1946	1	.....	.....
1947	59	$1,475,000	$311,342
1948	55	1,362,000	400,340
1949	27	644,500	289,176
*1950	14	303,853	235,259
*1951	14	336,100	395,755
1952	48	1,546,436	426,531
**1953	54	1,922,613	691,274

*Commercial deliveries curtailed by military production.
**First 9 months.

Bell's current production model is its 47G, a 200-hp., 3-place which at $33,550 is the lowest-priced of the industry's three commercial helicopters now being marketed ($36,000 for the 200-hp., 3-place Hiller and $140,000 for the 10-place, 600-hp. Sikorsky S-55).

There are no sales and service distributors and dealers for Bell helicopters in the United States and Canada, sales being handled by the factory at Fort Worth for the central states and by Bell Aircraft Supply Corporation (BASCO) for the eastern and western territories. BASCO was established in 1948 to develop petroleum industry and agricultural uses of helicopters and has been expanded with offices on both coasts.

Emphasis is on foreign sales, with 33 firms representing Bell in covering some 60 nations. Five of these firms are factory dealers — Hans Osterman in Sweden, Fenwick in France, Irving Bell in England, T. A. Y. R. in Argentina and Augusta in Italy. In addition, two overseas manufacturers have been licensed to produce Bell helicopters — Costruzioni Aeronautiche Giovanni Augusta in Gullurate, Italy, and the Nippon Machine and Trading Co., Ltd., Tokyo, Japan.

Factory service for Bell helicopters has been established on a worldwide scale. In 1946, the factory had seven

(Continued on page 26)

Airline use of 3-place, 200-hp., Bell Model 47 helicopters for flying the mail is typified by this scene showing Bell operated by Sabena Belgian Air Lines. Bins on side of the helicopter contain mail bags.

The Trouble With Airport Leases

Results of an NATA survey of airport site problems facing fixed-base operators

THE National Aviation Trades Association has conducted a lease survey of airport service operators to determine needs for improving the operator's site status on airports. It mailed questionnaires to 1,600 operators. Replies were returned by slightly over 400 of them in 45 states, and Glenn J. Degner, NATA vice president for airports, says the results may be fairly regarded as representative of the lease problem for the fixed-base operator industry as a whole.

Practically all of the 400 replies contained individual comments on their lease problems, the majority reporting they face difficulties negotiating satisfactory leasing arrangements. The general consensus is that leases are for periods too short to be satisfactory and that charges, if not too high, are too complicated.

Almost 72 per cent of the operators replying hold leases running from 1 to 10 years, with 24 per cent having 10 to 25-year leases. Only 4 per cent have leases running for over 25 years. This indicates that airport authorities generally are unwilling to provide an operator with a reasonable tenure of site or that operators are unwilling to commit themselves for long periods, or both. Because of the nature of the business, NATA says the only chance an operator has of recapturing a large investment in facilities and obtaining a reasonable return would be through a long-term leasehold or ownership of a site in fee simple.

More than half the operators hold a rather complicated lease calling for a minimum flat rental and a percentage take on all or a part of their business. The breakdown runs as follows: About 40 per cent of the leases call for a flat rental payment, while 12 per cent provide for a minimum rental and a percentage of the gross business done. Another 30 per cent provide for a combination rental and fees on gasoline, number of aircraft owned or a percentage of business done. Only a negligible number of operators pay rental on a straight percentage of business done, or only a fee on aircraft fuel sold and used, or only on the basis of square footage occupied, or only on number or time of aircraft operated.

The survey shows that about two-thirds of the airports allow the operator to engage in non-aeronautical business activity, while about one-third prohibit them from engaging in anything other than aviation business. The same approximate ratio holds also on exclusive rights on airports, with about one-third having exclusive rights and the balance of the airports being open to competition from additional operators. About 60 per cent of the airports surveyed have only one operator, the balance having 2 or more.

Eighty per cent of the operators replying to the questionnaire operate from publicly-owned airports. NATA's analysis of the survey, made public during its recent annual meeting in Wichita, Kansas, was limited to this group. A separate analysis is being made for later release on the remaining 20 per cent of the operators who operate from their own airports.

Investments By Operators

The survey analysis showed that operators have invested between $75 and $100 million dollars, half in buildings and facilities and the other half in equipment, including aircraft. Sales-wise, it is conservatively estimated by NATA that the industry is grossing about $100 million annually. A table, prepared from the questionnaires returned, is presented below to show the number of operators per 100 who have investments in fixed assets and equipment, including aircraft:

Category	Fixed Investment	Equipment Assets
Less than $5,000	24	10
$ 5,000-$10,000	17	18
$10,000-$20,000	19	27
$20,000-$30,000	12	17
$30,000-$40,000	6	9
$40,000-$50,000	8	7
$50,000-$65,000	2	4
$65,000-$80,000	7	1
$80,000-$100,000	1	2
Over $100,000	4	5
Total	100	100

This table shows that 62 per cent of the operators are in the $5,000-to-$50,000 category in fixed investments while 78 per cent are in the $5,000-to-$50,000 classification with respect to equipment assets. The largest single group are in the $10,000-to-$20,000 category for both fixed assets and

equipment and 28 per cent have more than $30,000 invested in both building facilities and equipment. The average investment in fixed assets by all operators reporting is $33,600 with $3[illegible],000 as the average equipment investment.

Annual Sales

Compared with the above investments, the average volume of annual sales for all operators reporting is $170,000. This is distorted by a few large operations which gross in sales over $1,000,000 a year. The table of sales as reported by operators is as follows:

Annual Sales	Number Per 100 Operators
$ 5,000-$ 10,000	9
$ 10,000-$ 20,000	9
$ 20,000-$ 30,000	12
$ 30,000-$ 40,000	13
$ 40,000-$ 50,000	8
$ 50,000-$ 75,000	9
$ 75,000-$100,000	10
$100,000-$150,000	8
$150,000-$200,000	3
$200,000-$300,000	7
Over $300,000	12
Total	100

This shows that operators may be grouped in three categories — 18 per cent are "small operators" grossing $5,000 to $20,000 in sales annually; 52 per cent are "medium operators" running $20,000 to $100,000 in sales and 30 per cent are "large operators" having annual sales of $100,000 and over.

NATA's survey thus establishes some interesting statistics by which the "typical" airport service operator can be measured. This "typical" operator must have an investment in fixed assets and equipment which is large in relation to his annual sales — he has $30,000 in fixed assets and another $30,000 in equipment but his annual sales run about $60,000.

Most Operators in Cities Under 100,000

Forty-five per cent of the operators reporting are located in cities of 10,000 to 100,000 population, with 25 per cent in cities of less than 10,000 and 30 per cent in communities of over 100,000.

About 30 per cent of the operators are located on Class 3 airports having 3,500-ft. to 4,500-ft. runways, with the remaining two-thirds about evenly divided between larger and smaller airports. About two-thirds of the airports have surfaced runways and three-fourths of them are lighted.

In the case of 50 per cent of the operators replying, both buildings and sites are under lease, while 30 per cent own their buildings on a leased site. About 20 per cent have a combination lease under which they have leased buildings and have also built their own buildings on a leased site. Thus, about half of the operators have invested capital in building facilities.

Two out of three airports covered by the survey have received federal aid, which means that CAA, under sponsor agreements with airport authorities, maintains a voice in the type of lease-hold which the operator can negotiate.

NATA says one out of every four operators reported having had difficulties in negotiating or re-negotiating his present lease. This has added significance when it is realized that about three-fourths of the operators hold leases running for only 10 years and less. "In other words," says NATA, "even though the bulk of the operators have been willing to settle for a temporary site, one-fourth of them have still run into snarls getting a location."

Average Operator in Business 7 Years

Significant facts regarding the experience of operators were brought out by the survey. Three-fourths of the operators replying have been in business at their present locations for five years or more. Fifty-four per cent have been in business 5 to 10 years and 19 per cent from 11 to 30 years, with only 10 per cent having been in business 2 years or less. Thus the average is 7.7 years of operating experience by those surveyed. NATA comments on this in its report as follows:

"By and far, large operators now in the business can be called old-timers. They have managed to develop their operations on a going-concern basis in the face of an operator mortality rate in the range of 5 out of 7 in the past 7 years. Accordingly, in any appraisal of the industry it must be realized that it is no longer in the infancy stage.

"On the other hand, the fact that

(Continued on page 34)

Factors for Success

INTERESTING observations have been made by C. B. Friday, director of New York's state aviation bureau, on key factors in successful fixed-base operations. He said his bureau's 1953 survey of aircraft service operators produced replies from which conclusions "can be stated with considerable confidence" as follows:

1. Fixed-base operations are more likely to be profitable on large airports than on small ones.
2. At airports about equal in size, the operator basing the greater number of active planes is more likely to be profitable.
3. Major repair service is the factor which best distinguishes the profitable operation.
4. Advertising by all of the profitable operators, while only half of the unprofitable operators do so, has an obvious lesson.
5. Flight instruction and plane rental produces high revenue almost everywhere it is offered and is an obvious "must" for operators not emphasizing it now.

Friday reported several other conclusions which he said can be accepted only tentatively because the survey evidence supporting them is not as clear as with those presented above. These are as follows:

1. Aircraft sales and service is a leading revenue producer and should be seriously considered by operators now ignoring it.
2. Gas and oil, sold by almost every operator, is a key revenue producer for only half of them.
3. Charter service and hangar storage are two services considered important by unsuccessful operators far more often than by profitable operators. The former should examine the costs of these items to see whether expenses are cleared — or else try harder on other services which rank high at profitable bases.
4. Air mapping and photography seems to be a good sideline for profit.

"The best services to add," the New York analysis advises, "would be those that produce revenue themselves and also serve to attract customers for other services. Thus a based plane means a potential customer for gas and oil, supplies and accessories and repairs. Sales and service of aircraft can lead to more based planes and, consequently more revenue from services offered. Major repairs generally involve the sale of necessary parts. Thus the operator can offer many potentially lucrative services but he is not likely to be successful if he fails to realize that the various services are tie-ins for each other and that when used as such are sure to increase income."

Engineers mount cameras and X-wing on supersonic rocket to test new design.

On California desert, rocket begins flight reaching 3 times the speed of sound.

Desert craters fade away as camera records speed effect on new experimental wing.

Here, another wing design flaps violently from the pressure of the supersonic speed.

Lockheed Scientists Shape the Forms of F

Lockheed's Expanding Science Center Improves Today's Planes and Develops New Designs for th

FIRST IN THE NATION'S ALL-WEATHER DEFENSE. Lockheed F-94 Starfires are jet interceptors loaded with electronics for almost automatic flight. Starfires protect vital U. S. cities, even in darkness or bad weather. For 8 years, Lockheed has built more jets than any other manufacturer.

Parachuted to earth, rocket camera is recovered with film data vital for the future.

Future Flight

the Era of Automatic Flight

The above film strips take you behind the scenes to show Lockheed scientists testing new wing designs for future aircraft many times faster than today's. This is an example of advanced research at Lockheed's expanding Science Center. Scientist-engineers work with nuclear energy, pilotless aircraft, electronics systems, new metals for the era of automatic flight.

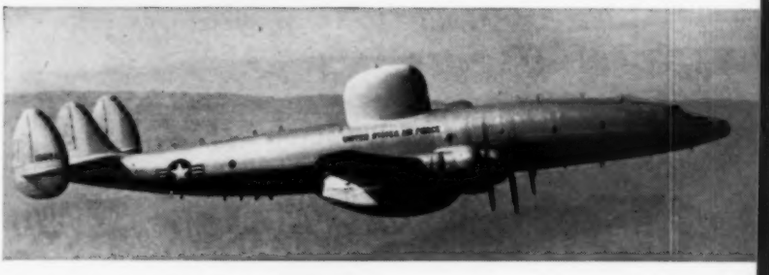
Lockheed discoveries in *pure* science are matched by Lockheed progress in *applied* science. Lockheed's science of design has produced a radar-laden team of protecting military aircraft—flying radar stations, almost automatic interceptors, anti-submarine patrol bombers. Skill in science of production enables Lockheed to produce 12 different models simultaneously—and all models are on schedule!

LEADERSHIP DEMANDS CONSTANT ACHIEVEMENT

SCIENCE CENTER—*Future forms of flight are studied here in Lockheed's new Engineering and Science Building.*

Announcement

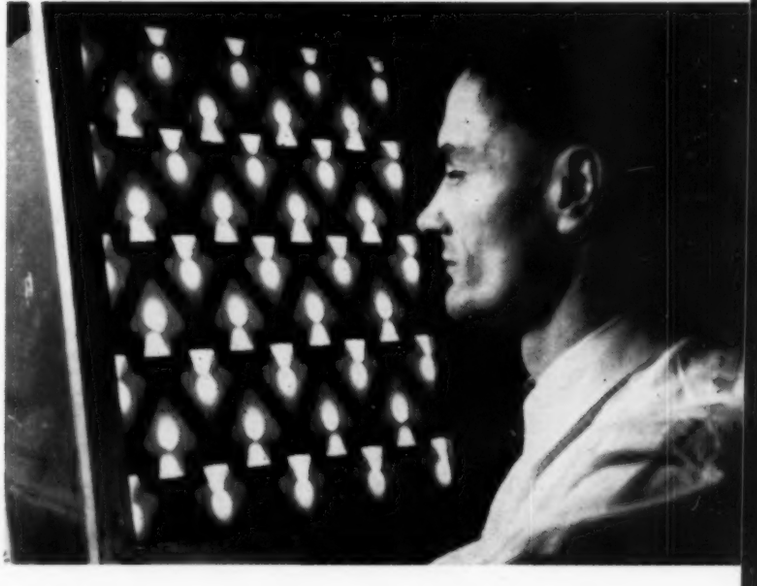
Important news in the U.S. aircraft industry this month was establishment by Lockheed of a new Missile Systems Division, a separate organization integrating 10 years of research and development in the field of electronics and pilotless aircraft. Important progress in current top-secret work at Lockheed prompted decision to establish new division in expanding field of automatic flight.



FIRST! FLYING RADAR STATION. Lockheed Super Constellations, with radar humps, provide Navy and U.S.A.F. with new concept of defense—a new method of detecting an enemy hours in advance through applied electronics.

FIRST! ELECTRONIC SUB PATROL—Advanced models of Lockheed P2V Neptune Bombers give U.S. Navy long-range sub patrol with destructive power and advanced sonic devices.

TOMORROW'S METALS. Planes 10 to 25 years from now, currently under study by Lockheed, will require new materials to withstand tri-sonic speeds. Here, Lockheed scientist checks X-ray film of new metal.



COMING SOON—*Look for other dramatic new Lockheed models soon, including XF-104 Day Superiority Fighter.*

Lockheed

Lockheed Aircraft Corporation, Burbank, California, and Marietta, Georgia

LOOK TO LOCKHEED FOR LEADERSHIP

ECONOMY, SAFETY, COMFORT and PERFORMANCE...

a PIPER tradition

Throughout the years all Piper models have excelled in the true Piper tradition of **economy, safety, comfort and performance.** The widespread public preference for these outstanding qualities is evidenced by the fact that in 18 out of the last 20 years Piper has led in personal aircraft sales.

Today's Pipers with their speed, range and utility continue to fulfill the Piper pledge to give the Piper owner more for his flying dollar.

• Ask one of the firms listed to demonstrate how one of the Piper models can save you valuable time and money. These firms are prepared to serve all your aircraft requirements.

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LOUISIANA AIRCRAFT
Municipal Airport
Baton Rouge, La.

Oklahoma

SMYER AIRCRAFT SALES & SERVICE
Municipal Airport
Ponca City

Texas

BROWN FLYING SERVICE
Municipal Airport
San Antonio

JACK ROBINSON FLYING SCHOOL
Meacham Field
Fort Worth, Texas

SOUTHWEST AIR RANGERS
International Airport
El Paso, Texas Midland, Texas

AIR REPORT

(Continued from page 7)

CHANCE VOUGHT AIRCRAFT, INC., is the new name of the former division of United Aircraft Corp. which established the Dallas organization as a separate corporation on January 1.

CONTROL OF INTERCONTINENTAL MANUFACTURING CO., INC., a major aircraft subcontract firm at Dallas, has been acquired by Harold J. Silver, president, who recently purchased all remaining common stock in the company. Only 39 and one of the youngest business executives of a major company in the country, Silver has directed Intercontinental policies since its organization in 1948. It has produced almost every type of large airframe sections for prime contractors.

A LOVE FIELD SALES OFFICE AND PILOTS LOUNGE has been established by Dal-Tex Aviation, Inc., Dallas dealer for Cessna sales and service at Highland Park Airport. The new office, located on the ramp between Southwest Airmotive and Braniff Airways, enables Dal-Tex to pick up and deliver customer planes at Love Field while centering its servicing, including Lear autopilot and radio installations for which it is widely known, at Highland Park. Webb Thomas is in charge of the Love Field branch.

NEW USE OF AIRPLANES IN BUSINESS is reported by Jim Gray, Beechcraft distributor in Dallas. He sold a Bonanza to Real Estate Developer Barney Dosterschill, who uses it to fly prospects over properties, showing from the air his property's location advantages and features.

AIR TRAVEL COST WELL BELOW THAT OF ANY OTHER FORM OF TRANSPORTATION is among predictions for aviation during the next fifty years voiced by Glenn L. Martin in his Wright Brothers Lecture delivered in Washington on Dec. 17 at the annual Institute of Aeronautical Sciences' celebration of the Wright Brothers' flight. Other Martin predictions: Fully automatic airline flight operations through electronic guidance and control equipment; flying boats with speeds matching those of equivalent landplanes but with greater capacity for passengers, cargo or weapons; helicopters carrying all airline traffic over distances of 150 miles or less; nuclear-energy-powered aircraft, first as bombers capable of multiple nonstop circumnavigation of the globe and secondly as passenger airliners; 200-passenger jet airliners crossing the continents and the oceans in literally zero time in the westerly direction, and inter-stellar space ships with 25,000-mph. speeds.

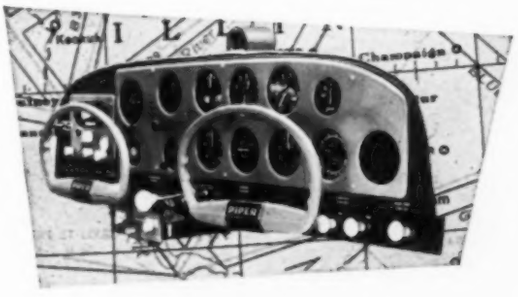
★ ★ ★

PICK Piper FOR PERFORMANCE

You want good, solid, all-around performance in the plane you'll buy and that's just why you'll pick the Piper Tri-Pacer. For Performance—along with safety, comfort, flying ease and economy—explains why more people are buying the Tri-Pacer than any other four-place business plane. They're getting performance *with economy* that makes plane ownership not only practical but a business necessity in these days when business comes to the man who gets there *first and more often—by flying.*

Only for thousands of dollars more do you get this performance

SPEED—over 120 mph cruise **CLIMB**—really nimble climb, light or loaded, for short fields or high-altitude airports
RANGE—over 575 miles on 36 gallons
ALTITUDE PERFORMANCE—fastest at 7000′, your Tri-Pacer equals sea-level performance at 12,000′.
Remember, all this with simplified controls, spin-resistant characteristics and tricycle gear which make the Tri-Pacer the safest, easiest-to-fly plane available today.
See the '54 Tri-Pacer at your dealer's today



NEW NAVIGATION EASE

Flight-planned panel of Super Custom Tri-Pacer lets amateurs navigate like experts. Standard equipment includes full gyro instrumentation, and a complete navigation package—VOR omni-range receiver, VHF transmitter and receiver, plus LF receiver and homing loop for standard broadcast and CAA ranges. Also available—automatic pilot.

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☐ Please send me new FREE brochure on Piper Tri-Pacer and Pacer.

☐ If under 18, check for SPECIAL brochure with photos, drawings of all Piper planes.

Name _____

Street _____

Town _____ State _____

SIKORSKY HELICOPTERS

(*Continued from page* 18)

is in the neighborhood of $137,000. This represents a "clean" aircraft — about the minimum available. Installation of seats, plush fittings, and optional equipment can bring the price all the way up to $150,000. Generally, prices range in between the two, depending on what the buyer wants in the way of extras.

In addition to the aircraft, a buyer gets five hours of free dual instruction for his pilot plus a free four-week service course for his plane captain. Additional dual time comes extra.

Servicewise, no sale is considered too remote. In addition to service school training given a buyer's mechanic, helicopter technicians of the United Aircraft Service Corporation are available should a mechanic get in over his head. In addition, Sikorsky issues a complete line of service manuals enabling any trained mechanic to do just about all necessary maintenance.

Sikorsky thinks well of the service setup available to commercial operators. It sincerely feels no operator wants for help when needed.

On the other hand, Sikorsky officials are quick to point out both sales and service setups are in a state of constant flux. They are willing to learn right along with the operators. Any operator is given a sympathetic and interested ear whenever something unforseen comes up.

By such interest and by keeping the commercial sales and service picture flexible, Sikorsky Aircraft hopes to press its run-away lead in the transport helicopter field and establish vital helicopter criteria which will make much of today's theory tomorrow's fact. ★ ★ ★

Operators of Bell Helicopters

EIGHTY-FOUR operators are using 270 commercial Bell helicopters in the United States and many foreign countries around the world. Forty-five of these operators use 150 Bells in the U. S., Alaska and Canada. By "commercial," Bell Aircraft means all non-military models.

U. S., Alaska and Canadian Operators

Bell Aircraft Corporation's Helicopter Division lists the following operators in the U. S., Alaska and Canada with the number of Bell machines operated by each: A-H Helicopters, Inc., San Fernando, Cal., 5; Alaska Helicopters, Inc., (Rick), Anchorage, 7; Allied Helicopter Service, Inc., Tulsa, Okla., 5; Arizona Helidusters, Tucson, 1; Associated Helicopters, Ltd., Edmonton, Alta, Canada, 3; Chicago Seaplane Base, Inc., Lombard, Ill., 1; Currey Flying Service, Galesburg, Ill., 1; Department of Transport, Ottawa, Canada, 3; Economy Pest Control, Yakima, Wash., 4; Helicopter Aircraft Service, Weedsport, N. Y., 1; Helicopter Air Service, Inc., Chicago, 7; Helicopter Services, Inc., Teterboro, N. J., 2; Hollinger-Ungava Transport, Ltd., Mont Joli, Quebec, Canada, 2; Hydro-Electric Power Commission, Toronto, Canada, 6; Johnson Flying Service, Missoula, Montana, 2; Kern Copters, Inc., Bakersneld, Cal., 6; LaMesa Helicopters, LaMesa, Cal., 1; Lewis Aircraft Sales and Service, Lockport, Ill., 1; Rod More Aviation Services, Corpus Christi, Tex., 1; Morrison-Knudsen Co., Vancouver, B. C., Canada, 4; New England Helicopter Service, Hillsgrove, R. I., 6; Canadian Helicopters, Ltd., 3; A. L. Newman, Kelseyville, Cal., 1; N. Y. City Police Dept., 5; Okanagan Air Service, Vancouver, B. C., Canada, 8; Ontario Dept. of Lands and Forests, Ottawa, Canada, 1; Petroleum-Bell Helicopter Services, Inc., Lafayette, La., 14; Allen Platt, Chelan, Wash., 1; Port of N. Y. Authority, New York City, 2; Herman Poulin, Inc., Yakima, Wash., 3; Red Bank Airport, Red Bank, N. J., 1; Rick Helicopters, Inc., Los Angeles, 8; Rotor Aids, Ventura, Cal., 4; Southern Air Transport, Inc., Miami, Fla., 1; Spartan Air Services, Ltd., Ottawa, Canada, 5; Suburban Propane Gas Corp., Whippany, N. J., 1; Tennessee Valley Authority, Sheffield, Ala., 4; U. S. Dept. of Interior, Vancouver, Wash., 2; U. S. Dept. of Interior, Phoenix, Ariz., 1; Helicopter Services of California, Stockton, Cal., 6; W. T. Waggoner Ranch, Vernon, Tex., 1; R. H. Welder Ranch, Sinton, Tex., 1; Wiggins Airways, Norwood, Mass., 3; World Wide Helicopters, Inc., San Francisco, 4; Hershey Young & Co., Ft. Morgan, Colo., 1.

Foreign Operators

Bell Aircraft lists the following foreign operators and the number of Bell helicopters each operates:

Aerotecnica, S. A., Caracas, Venezuela, 3; Aersilta, Milan, Italy, 1; Air Outre-Mer, Hanoi, Indo-China, 1; Argentine Naval Commission, New York City, 6; British European Airways, Horley, Surrey, England, 2; Centre D'Assais en Vol, Bretigny sur Orge, France, 3; Chilean Air Force, Santiago de Chile, 3; Chinese Air Force, New York City, 2; Cia Hidro Electrica de Sao Francisco, Rio de Janeiro, Brazil, 1; Colombian Air Force, Bogota, Colombia, 6; Directorate General of Agriculture, Baghdad, Iraq, 2; Electricite de France, Gard, France, 1; Escadrille 58, Toulon, France, 3; Fenwick, Paris, France, 5; Forrer-Fenwick, Zurich, Switzerland, 1; Gendarmerie Nationale, Paris, France, 1; Helicoop Cooperative Agricole, Paris, France, 1; Imatron Voima Osakeyhtio, Helsinki, Finland, 1; Irvin-Bell Helicopter Sales, Ltd., Letchworth, Herts, England, 1; Italian Air Ministry, Rome, Italy, 3; Italian Dept. of Agriculture, Rome, Italy, 2; Mineraria Somala, Lodi, Italy, 1; Ministere de Guerre, Paris, France, 2; Ministerio da Aeronautica, Rio de Janeiro, Brazil, 3; Nippon Machinery Trading Co., Ltd., Tokyo, Japan, 16; Ostermans Aero AB, Stockholm, Sweden, 6; Governor of Parana, Curitibe, Brazil, 1; Philippine Air Force, Washington, D. C., 3; Prefecture de la Guyanne, French Guiana, 1; Headquarters, RCAF Air Materiel Command, Ottawa, Canada, 2; Royal Canadian Naval Air Station, Dartmouth, Nova Scotia, 3; Royal Danish Air Force, Denmark, 3; Royal Norwegian Air Force, Osla, Norway, 6; Sabena Belgian Air Lines, Brussels, Belgium, 3; Societe de Transports Aeriens, Alpesprovence, France, 3; Societe Aerienne de Recherches, Dakar, 1; Syndicat de la Cellulose Africaine, Brussels, Belgium, 1; T. A. Y. R., Buenos Aires, Argentina, 13; and Viacao Aerea Sao Paulo, Sao Paulo, Brazil.

BELL HELICOPTERS

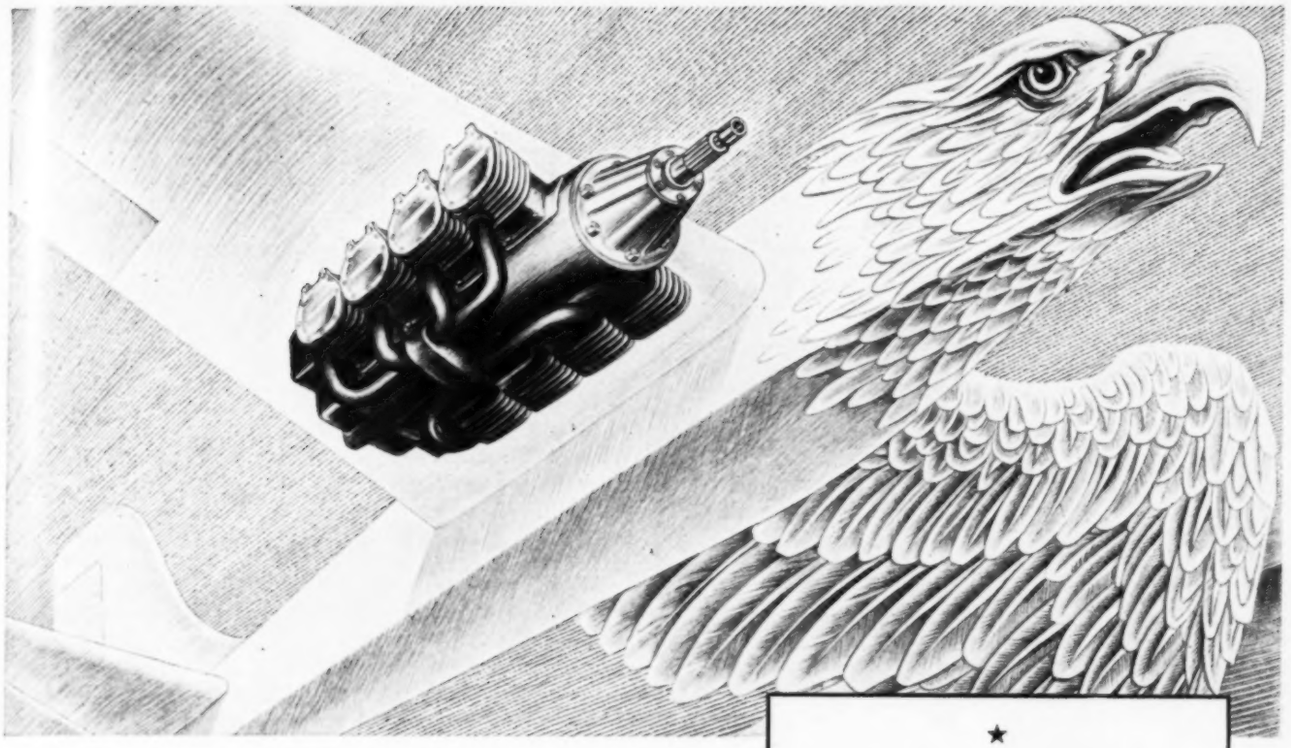
(*Continued from page* 19)

service representatives on the payroll. Today, Bell has 23 of its service experts stationed in the U. S., Canada, South America, Germany, Korea and Japan. They are available on call to any operator of a Bell helicopter, serving as trouble-shooters who help maintain the helicopters and offer instruction in maintenance and repair. A factory service program has produced excellent "kits" for complete overhaul and modernization in the field. Used Bell helicopters are seldom found on the market, re-sale prices being high. Factory training courses have turned out 661 pilots and mechanics, of which 447 were civilians.

There are a hundred or so uses to which the little Bells have been adapted. The petroleum industry, which pioneered in the business use of fixed-wing airplanes, was first to utilize helicopters and they are operated on a large scale in exploration for oil. Other notable uses include air mail, construction, police work, agricultural, power-line patrol, commercial fishing, livestock ranching, photography for movies and the press and executive transportation.

Bell is intensifying its commercial sales efforts. No new commercial designs have been revealed, but it can be assumed that Bell is in a position to further numerous commercial developments from its large and varied mili-

(*Continued on page* 30)



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Over 25 years ago, Lycoming created its first aircraft engine. Today, Lycoming builds 54 different reciprocating engines with a horsepower range from 65 to 1525—including America's only geared and supercharged air-cooled engines in the 400-h.p. class.

In the field of jet power, Lycoming produces high-quality precision parts and major assemblies. From Lycoming come engine components for J-47 jet engines . . . main leg cylinders for F-86 Sabrejet landing gear . . . complete gearboxes for J-40 jet engines.

Do *you* need dependable air-cooled power . . . precision parts . . . or any other of the diversified services listed with our signature? Lycoming's wealth of creative engineering ability . . . 2½ million square feet of floor space . . . and 6,000-plus machine tools stand ready to serve you. *Whatever* your problem . . . *look to Lycoming!*

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AMERICAN CAR AND FOUNDRY COMPANY
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BEECH AIRCRAFT CORPORATION
BENDIX AVIATION CORPORATION
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THE CLEVELAND PNEUMATIC TOOL COMPANY
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FORD MOTOR COMPANY
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GENERAL MOTORS CORPORATION—
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DETROIT TRANSMISSION DIVISION
CADILLAC MOTORCAR DIVISION
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PIPER AIRCRAFT CORPORATION
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How to Get the Most Out of Your Cessna

Practically all Cessna owners today use their airplanes for the same reason — they need the most efficient and most flexible transportation available.

Hundreds of Cessna owners depend on the Authorized Cessna Service Stations listed below for their transportation needs — Authorized Cessna Service is their assurance that business planes are always ready to go, always in top condition for reliability, performance and comfort.

If you use your Cessna for important business needs, insist on Authorized Cessna Service at the Cessna Service Stations listed below. Their record for dependability and satisfaction is endorsed by the factory. Their long-established, factory-supervised Flat Rate Service guarantees every Cessna owner three important things:

1. You get an accurately quoted price and time-required quotation based on hundreds of job studies covering virtually all your maintenance needs.
2. You get genuine Cessna parts and factory-trained workmanship.
3. You save money and time and we stand behind every job for your fullest satisfaction.

More and more Cessna owners are recognizing the importance of these Flat Rate Service advantages.

To make the most of your Cessna's usefulness, visit the Authorized Cessna Service Stations listed below.

These progressive Cessna Authorized Service Shops offer flat-rate service.

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Aviation, Inc.
15th Street Air Park
Tulsa, Oklahoma

Champ's Flying Service
Municipal Airport
El Paso, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Dal-Tex Aviation, Inc.
Highland Park Airport, Dallas, Texas

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Howard Aero Service
San Antonio International Airport
San Antonio, Texas

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Southwestern Skyways, Inc.
New Municipal Airport
Santa Fe, New Mexico

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

West Texas Flying Service
Midland Airport
Midland, Texas

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

Top Performer... Now Proved and Improved

It's '54's "Smoothest" Airplane

America's most widely acclaimed new airplane—the powerful Cessna 180—now offers you greater performance, beauty and value than ever in a brilliant 1954 model! Completely service-proved—refined and improved in dozens of ways, it's quieter and smoother, cruises over 150 m.p.h., offers full 4-place comfort, brilliant new interior and exterior colors and styling and yet the Cessna 180 is still $6000 *under* the nearest competitor. Only $12,950!

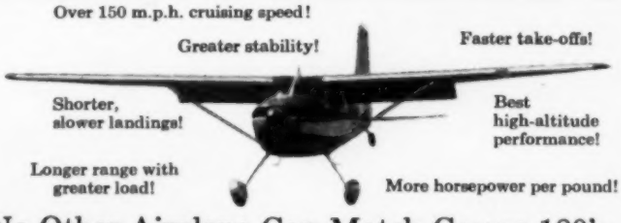
Cessna 180 AIRCRAFT COMPANY

Smoothest Power Possible

. . . So smooth that when the engine is running, you can even rest a glass of water on the cowling without disturbing the water! . . . flashing 6-cylinder power with automobile economy. Eight brand-new engine improvements.

"Living Room" Comfort Aloft

Step in! Stretch out! Here you'll find more foot and leg room, more over-all comfort than in any other airplane in the 180 class. A powerful heating-ventilating system keeps you comfortable in every season, at every altitude.



No Other Airplane Can Match Cessna 180's All-Round Performance!

New Exterior Baggage Door . . . New Color Striping . . . New Upholstery . . . New Sloping Map Compartment . . . "Para-Lift" Flaps . . . World's Safest, Smoothest Landing Gear . . . Extra Sound-Proofing . . . Gravity-Feed Fuel System (60 gals.) . . . Easy conversion for skis, floats or cargo. For more information, see nearest Cessna dealer (listed in yellow pages of your telephone book) or write Cessna Aircraft Co., Dept. FM-2, Wichita, Kansas.

First All-Woman SARCAP

SEARCH and rescue missions by the Civil Air Patrol, a major activity directed by the U. S. Air Force Air Rescue Service, are taking on wider scope with winter flying difficulties. Periodic practice missions keep CAP units sharp in their search technique and the newest development in training was a recent Texas Wing search and rescue mission conducted by women members—the Civil Air Patrol's first all-woman SARCAP.

Maj. Marian Guiberson

Major Marian Guiberson, assistant director of operations on the Texas Wing staff, was mission commander, assisted by First Lieut. Florence Willess, Texas Wing assistant adjutant. Bad weather the day before and instrument conditions the morning of the one-day all-out mission held down participation, but despite the weather 68 planes and 297 persons, including 50 CAP cadets, took part in the exercise. It was conducted at Austin, Texas, based in tents on the municipal airport with Ragsdale Flying Service cooperating. Sorties flown totalled 97 and 187 hrs. 45 mins. in air time was logged during the mission.

Colonel James Camp, Texas Wing commander, praised the first all-woman SARCAP, saying it scored 131 points out of a possible 150 score in grading performed by the 47th Squadron of the Air Force Air Rescue Service, based at Ellington Field. "It was by far the best planned and best directed SARCAP of record," said Camp. "Women members stayed by their posts and worked more diligently at their assignments than men have done in past exercises. They certainly justified all the confidence and interest of the Air Force Air Rescue Service under which all CAP search missions are made possible." ★ ★ ★

FAIRCHILD'S JET

(Continued from page 17)

non-stop coast-to-coast operation would be provided with external wing tanks. Estimated performance includes take-off over a 50-ft. obstacle within 2,600 ft. at 75,000-lb. gross weight, with a landing roll of 2,500 ft. using brakes alone. "By employing reverse thrust in combination with standard brakes, it will land in 1,400 ft.," the Fairchild announcement said.

The proposed Fairchild has a 100-ft. span, length of 98 ft. 7 ins., and height of 31 ft. 8 ins. The horizontal stabilizer is located atop the vertical fin. The design features the "cusp" wing, a hybrid developed from the delta and conventional straight wing. This is said to retain the delta's advantage of having root thickness for maximum structural strength as well as sufficient space for engine, gear and fuel. At the same time, it offers the straight wing's extended wing-tip of higher aspect ratio for increased range, more trailing edge for flaps and ailerons and the straight wing's stability at low speeds. ★ ★ ★

BELL COPTERS

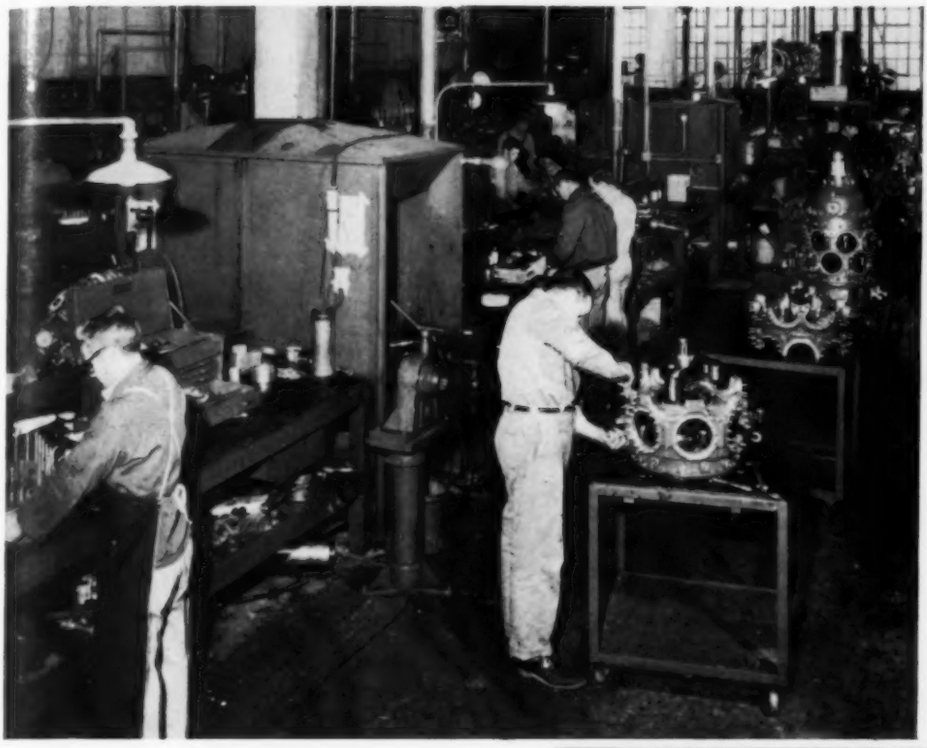
(Continued from page 26)

tary rotorcraft projects. These are known to include a tandem-rotor transport of at least DC-3 capacity, for which twin turbine power plants are indicated commercially; a high-performance convertiplane and, Bell's latest project, a lightweight helicopter using a 280-hp. Artouste turbine. These and other activities indicate that Bell will sooner or later be in a position to cover most of the needs of a rapidly growing commercial market. However, the company will probably continue to devote its efforts primarily to military and government sales and development. ★ ★ ★

110-YR.-OLD WALTER WILLIAMS of Franklin, Tex., is shown above in a Cessna 170 flown by Henry Hejl as the oldster took his first airplane ride. Flight was from Coulter Field at Bryan, Tex., operated by R. J. Cardwell. Mr. Williams was 22-yr.-old Confederate war vet when Abe Lincoln was assassinated.
—(Photo by Roland Chatham.)

AIRCRAFT DISTRIBUTORS AND MANUFACTURERS ASSOCIATION OFFICERS AND DIRECTORS were photographed (above) at the eleventh annual ADMA meeting in St. Louis recently. Seated, left to right, are L. W. Trees of Bendix-Scintilla, past president; James Riddle of Narco, vice president; Lawrence Zygmunt of General Aircraft Supply, president; R. S. Northington of Piedmont Aviation, vice president, and G. B. Van Dusen of Van Dusen Aircraft, advisory board member. Directors (standing, left to right) are F. D. Morrison, Champion Spark Plug; V. R. Knudsen, Standard Aero Engine; W. G. Smith, Air-Parts, Inc.; R. J. Montgomery, GM Packard Electric; R. G. Diehl, MacWhyte Co.; J. D. Gibboney, Bendix; C. R. Irons, Air Associates and L. F. Bollo, Standard Aircraft Equipment.

Geared to Perfection in Engine Overhaul



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RELIABLE ENGINES

Your maintenance costs can be reduced through

Beechcraft *Certified Service*

Here are a few important reasons why:

1 Only Factory Certified Service Stations are authorized to make Beech-directed modifications. These companies get Beech bulletins promptly and follow them to the letter. They have direct, ready access to all official Beech data.

2 At any one of the BEECHCRAFT CERTIFIED SERVICE STATIONS you will find trained specialists who have devoted their professional lives to the work they enjoy as a skilled craft. Each person has been chosen because of his outstanding professional ability in his particular line of work and trained in Beechcraft methods by the factory.

3 When your Beechcraft requires the replacement of a part, you know the Beechcraft Certified Service Stations will use only factory-authorized parts. And more important, they will avoid the long delay that comes from not having the part in stock. Each of the Certified Service Station maintains a complete stock of parts for your immediate needs.

4 The extensive maintenance facilities available to you at Certified Service Stations are equipped to serve every overhaul and maintenance requirement. Special tools are used for each job, all designed after long-specialized experience in every phase of service and maintenance. These special tools are important to you for they minimize the time required to perform each job.

To obtain the best service for your Beechcraft visit the Certified Beechcraft Service Stations listed.

AIRCRAFTSMEN, INC.
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Oklahoma City, Oklahoma

ALAMO AVIATION, INC.
Municipal Airport
San Antonio, Texas

ANDERSON AIR ACTIVITIES
General Mitchell Field, Milwaukee, Wisc.
Truax Field, Madison, Wisc.

ATLANTIC AVIATION CORP.
Teterboro Airport, (25 minutes from Times Square)
Teterboro, New Jersey
Logan Airport, East Boston, Mass.

ATLANTIC AVIATION SERVICE
New Castle County Airport, Wilmington, Delaware

BUTLER CO., AVIATION DIVISION
Municipal Airport, Chicago, Ill.

CURREY SANDERS AIRCRAFT CO., INC.
Downtown Municipal Airport, Shreveport, La.

CUTTER-CARR FLYING SERVICE, INC.
West Mesa Airport, Albuquerque, New Mexico

GRAY AIRCRAFT SVC. CO., INC.
D. A. Cody, Service Mgr.
Love Field, Dallas, Texas

HUNTER FLYING SERVICE, INC.
Hunter Field, Cedar Rapids, Iowa

ROD MORE AVIATION SERVICES
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Corpus Christi, Texas

OHIO AVIATION COMPANY
Dayton Municipal Airport, Vandalia, Ohio

PACIFIC AIRCRAFT SALES CO.
Oakland Airport, Oakland, California

ROSCOE TURNER AERONAUTICAL CORP.
Municipal Airport, Indianapolis, Ind.

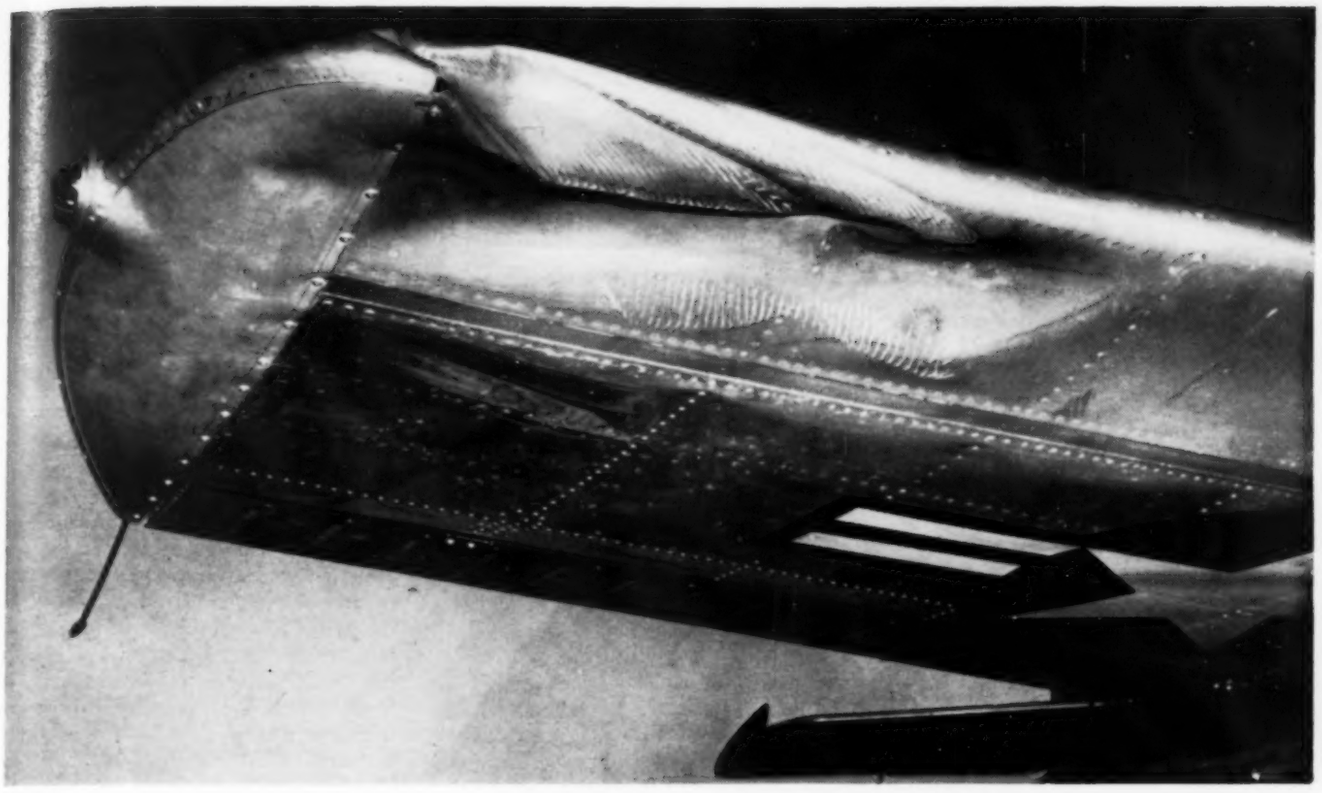
J. D. REED CO., INC.
Municipal Airport, Houston, Texas

TOPEKA AIRCRAFT SALES & SERVICE
Municipal Airport, Topeka, Kansas

TRADEWIND AIRPORT CORP.
Tradewind Airport, Amarillo, Texas

TULSAIR DISTRIBUTORS, INC.
Hangar 5, Municipal Airport, Tulsa, Oklahoma

WINGS, INCORPORATED
Wings Field, Ambler, Pennsylvania
Philadelphia International Airport, Philadelphia, Pa.



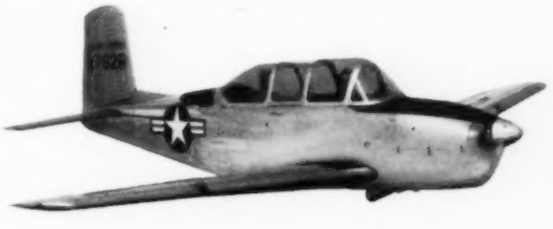
the PLUS factor

All *Beechcraft* airplanes are designed and built to possess *more strength* than is required by government regulations. *Beechcrafts* have a *plus factor* which is intended to provide long life for the airplanes and extra safety for their occupants.

The photograph above shows the right wing of a T-34 (Mentor) *Beechcraft* after it hit an aerial cable in a canyon at full cruising speed. The cable did not break, but almost stopped the *Beechcraft* and spun it around, 350 feet above the canyon floor. The skill of the military pilot was so great that he was able to regain flying speed and control before reaching the canyon floor. The T-34 *Beechcraft* trainer was flown back to its base and made a normal landing. Examination showed that damage was confined to the superficial contusions and abrasions shown in the photograph.

This is another example of the *plus factor* in *Beechcraft* construction.

The Beechcraft T-34 trainer is now *in production* for the U. S. A. F. and the military services of friendly foreign governments.



Beechcraft

Beech Aircraft Corporation, Wichita, Kansas, U. S. A.

Beech Builds: USAF T-34A • USAF L-23A • USAF C-45H • USN SNB-5 • Model 35 Bonanza • Model 50 Twin-Bonanza • Model 18 Executive Transport

IF YOU OPERATE OR MAINTAIN AIRPLANES—

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Let's face facts. The Land-Air Engine Analyzer is *not* a "fancy-Dan" piece of equipment that can be excluded on the basis of budget-itis.

It *is* equipment that makes flying *safer*, because it lets you foresee difficulties before they become failures.

The Land-Air Engine Analyzer *pays for itself* in materials, time, and labor saved.

It *does* analyze vibration as well as ignition.

And—ready to go—*it is the lowest priced unit* on the market today.

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Land-Air INC.

Engine Analyzer

AIRPORT LEASES

(Continued from page 21)

only 5 per cent have been in business for one year and another 5 per cent have been in business for only two years represents a rather profound commentary on the industry. Either new capital and talent do not regard the outlook in the industry as being promising with respect to the growth of general aviation or the barriers in the way of investing in the industry are so great that new capital is reluctant to take the risk.

"In view of the fact that the past three years has witnessed a gradual but steady increase in the utilization of the private type aircraft for business travel and the agricultural and industrial use of this type aircraft has increased impressively, it is reasonable to assume that the barriers placed in the way of new capital and talent are largely the causes for new blood avoiding the industry. From the survey, it is clear that the difficulty in obtaining security of site is among those barriers."

Lease Recommendations

In its report, NATA issued some recommendations intended as a guide for its members in negotiating for an airport site. These include the following:

In cases where the operator erects his own hangar, shop or office, a lease should be in perpetuity or for maximum term permitted under existing laws with provision for an option on a longer term if, as and when permitted by future changes in laws or charter provisions. Ownership in fee simple should be seriously considered by both the operator and authorities administering public airports; advantages of this include greater stability for the operator, better service and better maintenance, and more practical financing of construction costs.

Where the airport owns the building facilities, operator should seek a lease for minimum of 10 years with optional renewal for 5-yr. minimum but preferably another 10 years. Site security gives operator incentive to build his business on a sound and permanent basis. If operator assumes building maintenance, he should be given an option to acquire the building and site in fee simple.

If the operator has purchased a site and erected his own building, rental or franchise payment fee should be based on the volume of aircraft fuel consumed and sold. If operator has leased the site on which he erected his building facilities, rental should be based on a square footage or front footage basis, the amount varying with air-

port size and volume of activity on the airport; in addition, fee covering franchise or right to operate from the airport should be based on aircraft fuel sold and consumed.

In cases where the airport provides the site and buildings, it is recommended that rental be based on a flat minimum rental for the building facilities and that a fee be paid covering the franchise or right to operate on the basis of aircraft fuel sold and consumed. In this case, an independent appraisal should establish current fair value of buildings and the flat minimum rental, exclusive of any fringe considerations such as utilities, janitor service, living quarters, etc., should be based on a maximum useful life of the facilities. For example, an existing structure with a useful life of 25 years and valued at $25,000 would be depreciated at $1,000 annually and this sum would be recaptured from rental payments, along with a return on investment of 4 to 5 per cent annually or about $1,000 to $1,250. Finally, insurance, maintenance and taxes (if any) could be computed, $500 insurance being expected and 1 per cent per year for maintenance or $250. Adding these, the sum would be $2,750 to $3,000 annually (no taxes are assumed on publicly-owned property) and this would represent the rental required in such an example.

Commenting on its suggestions, NATA said there are almost as many

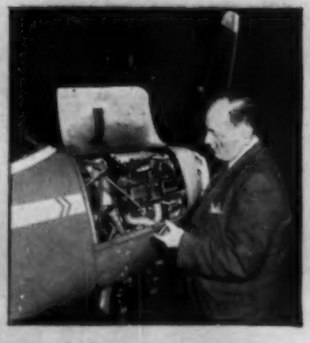
SUPPLY DROPPING has been provided by De Havilland Aircraft of Canada, Ltd., for its Beaver, shown with externally-carried supply containers. Four wing containers carry 250 lbs. each and a belly container carries 800 lbs., for an 1,800-lb. droppable payload. Pressing a button on the pilot's control wheel releases the containers selectively or simultaneously. The latest Beaver is a triple-threat agricultural combination model which is outfitted to dust, spray or drop supplies.

Back in 1927, Charles Lindbergh hopped the Atlantic—one way—in his "Spirit of St. Louis" plane, and furnished the news story of that decade.

During the past summer, Peter Gluckmann touched his tiny Luscombe down on California soil after spanning the American Continent and the Atlantic, not once but twice, and created scarcely a ripple outside his own home town.

The matter-of-fact acceptance of that round-trip trans-Atlantic flight, in a plane strictly stock except for wing tanks, speaks volumes for the strides made by aviation in the 26-year interval between the two events. With airplanes hopping oceans every day, neither Peter Gluckmann nor the public seems to have viewed his flight as other than routine.

Mr. Gluckmann undertook that flight entirely on his own initiative, asking no help from Continental Motors or anyone else. Nevertheless, as manufacturer of the C90 engine on which he staked his life, this company naturally finds intense satisfaction in its outcome . . . in the fact that Continental stamina, fine product of advanced engineering and strictest quality control, has again proved equal to a challenge far greater than could possibly be encountered in normal use.



Continental Motors Corporation
Aircraft Engine Division
MUSKEGON, MICHIGAN

CHEROKEE AIRPARK IS NEW NAME FOR COMMERCIAL AIRPORT at Tulsa, Okla. Owner A. M. Horrall says "Commercial" was good name when he bought it in 1933 but now conflicts with the city's municipal field — people keep calling on the phone about airline schedules. Located 5 miles southeast of downtown Tulsa, Cherokee Airpark provides business fliers with concrete runways, major overhaul and repair, storage for transients, taxi service, coffee shop and rest rooms. Bob Gallant is manager.

rental plans as there are operators. A uniformity of principle should be established which would be applicable to varying situations, it points out. Its studies showed fees based on hours of flight or number of aircraft to be too difficult to record and inaccurate as a gauge of over-all business volume. The most practical method of arriving at a fee for an operator's use of an airport is thought to be a charge based on aircraft fuel consumed and sold. This is easy to calculate because the fuel pumps quickly give the figures and fuel consumed and sold is the most accurate all-around gauge of business volume done by an airport operator. Serious consideration has been given to plans based on a percentage of gross sales. However, NATA said determination of a fair percentage is difficult because of the varying characteristics of an operators' business. Even in established retail business, a wide variation exists in percentages charged within the same type of stores. Rental payment based on volume of aircraft fuel consumed and sold is preferred, the Association said.

Although about one-third of the operators replying to the questionnaire feel they should hold exclusive airport operation rights, NATA reported it is doubtful that the operator actually benefits from an exclusive franchise since federal aid is automatically denied when such is the case and this is important for the future even though no federal aid is presently available. In cases where an airport is not likely to have enough traffic to support more than one operator, NATA suggests that the franchise and lease contain a provision requiring any other operator to provide comparable facilities both in buildings and equipment as a guard against unfair competition.

NATA recommended that operators should not be prohibited from engaging in non-aviation business.

The group feels that an operator would be unwise not to insist on the right to sell aircraft fuel. This right should be an integral part of an airport operation. Whether fuel sales are profitable or not, they lead to sale

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of other services, accessories and aircraft.

In three-fourths of the cases reported in the survey, the airport owner provides for airport maintenance. The owner provides a separate airport manager in 58 per cent of the airports surveyed with the operator also serving as manager in the other cases, three-fifths of whom receive no compensation for this service. Where the operator does receive compensation for doubling as airport manager, it is usually in the form of a credit against the rental to be paid. Farming operations are carried on by 45 per cent of the airports covered by the survey, with about one-third of the farming rights being held by the airport operator.

About 70 per cent of the airport operators reported having but one to seven persons on their staffs. Half of this group had only one to 3 persons and the other half employ 4 to 7. Only 5 per cent employ more than 30 persons. The other 25 per cent have from 8 to 30 employes.

Generally, airport operators offer a diversified service including flight training, aircraft sales and service, charter, aerial cropping, storage, gasoline sales and other activities such as aerial patrol and photography. This was indicated by 80 per cent of the operators replying. ★ ★ ★

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Chief Pilot
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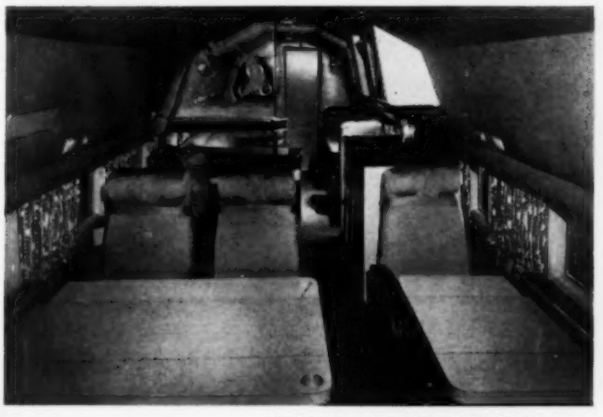

An interior view of the Delhi DC-3

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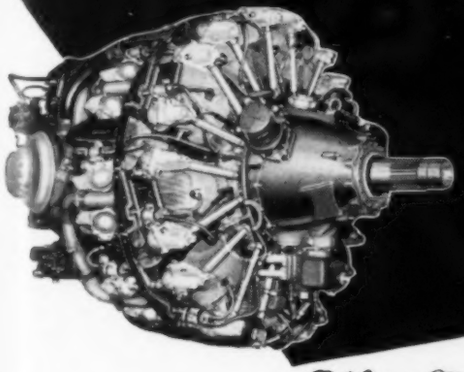

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Outlets for oxygen are shown by each seat just above the air vents (above) in Federated Petroleum's Lodestar. Two-bottle supply and regulator are shown at right.

Oxygen For Cabin System

CABIN oxygen systems are providing business executives comfort and safety in over-flying the weather to maintain important schedules. Low fuel consumption, smoother flights and higher speeds are added benefits.

One example of modern cabin systems is furnished by a Lockheed Lodestar operated by Federated Petroleum Co. of Calgary, Canada. It was equipped by Potter Aircraft Service, Inc., of Glendale, Calif., with the Scott 8500 Fixed Oxygen System. Two supply bottles behind the forward bulkhead feed through a Scott 8550 Regulator. It is manually adjusted to supply correct flow at altitudes up to 30,000 feet, far beyond the plane's ceiling. Oxygen is piped to each seat and passengers can plug into the system at any time, using disposable masks which allow normal conversation. Earle M. Scott, president of Scott Aviation Corp., congratulated Potter Aircraft for the excellence of its Lodestar installation. ★ ★ ★

Earle M. Scott, oxygen equipment manufacturer, is shown at right above by the Federated Petroleum Lodestar with Charles Potter (second from left) of Potter Aircraft Service and Air Associates Sales Representative Morrow and Fred Twomey, Air Associates vice president and branch manager. Many executive transports are using Scott oxygen systems for cabin passengers.

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Questions and Answers for Airport Operators

Gifts and Favors for Airport Managers

QUESTION: Christmas has come and gone, but it left behind a problem I didn't anticipate. This is the end of my first year as an airport manager and my first Christmas as one. Completely unforeseen, I received a number of gifts the day before Christmas. They varied from a calendar to a turkey from the biggest local taxicab company. However, the usual gift was a jug.

What gives me pause to write you is this: I've tried to operate with absolute impartiality, yet I've had to bear down on one of the operators. He came in all smiles and sat down and talked for fifteen minutes and left me a package — another fancy bottle of bourbon. I've checked and there are no rules that I can find against accepting presents like that. Nevertheless, I've felt uncomfortable about these gifts ever since. Not the calendar, of course, but those which had a monetary value, even though the value is modest.

What would you consider the ethics of such a situation? I couldn't turn the gifts down without appearing stiff-necked, could I?

ANSWER: Right. There is nothing unusual or unethical about things like that. A lot of airport managers had the same kind of Christmas, which is a time to forget friction and disagreement. In the small world which is an airport, the folks making their living there enjoy a certain kind of intimacy, sometimes fiercely competitive, but still one representing a common front

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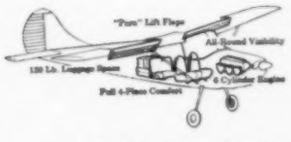

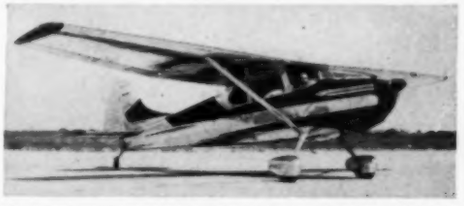

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in endeavor and understanding.

The time for you to worry is the Christmas that passes without a token of any kind in the name of friendship. When that happens it's like seeing your name in an uncomplimentary light on the toilet wall.

There are two things to guard against. The first is gifts so substantial as to appear to be intended to place you under obligation.

Despite the fact that you know no gift could make you favor one at the disadvantage of others, you would be operating under false pretenses if you allowed any giver to believe he had bought your preference by accepting his substantial gift. In fact, it might make you bend over backward to avoid favoritism in dealing with him. The second is to accept any gift which you felt you had to keep quiet. Such a thing might very well rise up to haunt you later—in event you had to favor that giver in all fairness against another who knew about it. You may always be sure that there are very few secrets around an airport.

So, provided there are no local rules against it, don't worry about accepting small presents in the friendly spirit in which they are offered. Continue to so conduct yourself that you maintain a reputation for fairness. Only a stupid individual would believe a good airport manager could be "bought" for a jug of bourbon.

$500 Planes and Storage

QUESTION: As an operator, I'm faced with a definite problem. I've a rented hangar. I charge the same monthly hangar rates to owners as the other operators do. I sold a 2-place airplane last week to a young local pilot who works for a salary. The price was $600. He wanted to hangar it with me but when I told him the monthly rental I had to get, he tied it down outside for two days and then flew it over to a grass field where he could rent a T-hangar for a little over half what I have to charge.

In trading around in aircraft, I frequently pick up one in the $500-$1,000 class. The local purchasers of such aircraft cannot afford to pay the storage rates here. But when they take their aircraft elsewhere, I lose the subsequent small sales and services I usually get from owners who store with me. I've talked to other operators but most of them on this airport aren't interested in the $500 airplane boys. What are your thoughts on this problem?

ANSWER: We wish there was a pat answer to that question. You are not the first one to talk to us about it. The problem you tell us about is one that exists most often on public airports serving larger cities, where

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FORTY YEARS OF PILOTING by Russell F. Holderman, chief pilot for the Gannett Newspapers, Rochester, N. Y., brought him a special CAA certificate from CAA Administrator Fred B. Lee (right). Holderman soloed at Mineola, Long Island, in 1913, was an Army flying instructor in World War I, a mail pilot during the 20's and operated a flight school before 1930. He has flown over 2 million miles for Publisher Frank Gannett since 1934 and has logged 22,000 hours.

storage facilities are in short supply.

High hangar leases, higher costs of labor, greater ownership of executive aircraft by those able to pay higher costs, and crowded hangars have joined the two forces of economics and the law of supply and demand into a single obstacle against the fellows who buy the aircraft you call $500 jobs.

From all indications, it appears there is a steadily growing increase in the ownership of used aircraft which can be bought for less than $1,000. That's a good sign—a sign of the resurgence of the liking for flying among those not in higher income brackets such as the young salaried man, the flying club member, the small business man who doesn't have the dollars to buy a gleaming new airplane but wants to keep his hand in until the day comes when he can get in that class.

When he faces the cost of storage based at a level designed to provide for those gleaming jobs he can't own, he either ties down outside or goes to a field where he can get lower rentals.

Such trouble doesn't exist to a great extent in smaller towns. It has been reduced as a problem in some cities by the provision of adequate storage space, principally through banks of T-hangars.

Here management must recognize that if it supplies individual hangars at reasonable rates it must be sure that the rents charged operators for general storage hangars is equitable enough for them to stay in the general storage rate bracket without loss. There is no implication that such general storage hangars when designed to house larger aircraft do not require higher capital investment and higher storage rates for such aircraft. That's plain economics.

Look around you at the airports where storage rates are high. As an operator you know what you must charge to come out with a reasonable profit. You know, too, which man

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you'd select if you faced a choice of two customers, one with a late-model $15,000 aircraft well able to pay $40 a month or so rental and the other with a $500 second-hand aircraft who would have to struggle to pay $20 a month for storage. That doesn't give any solace to anybody, including the $500 boys, but it is plain, hard fact.

What to do about it? There has been no sharp rise in the ownership of single-engine aircraft, yet hangar storage shortages have persisted in many places. That's at the heart of the problem. It is true, also, that many metropolitan airports have little remaining areas for hangar development, especially individual hangars. Those cities which have well-developed secondary airports have been able to combat the shortage but there again the costs of building and maintaining these structures may prevent rates at a level your customer expected.

There's a lot more to the problem than that, of course, but you can examine the situation at your own airport in the light of answers to these questions:

1. Is the rent you pay as a hangar operator a realistic return on the owner's cost?

2. Is the storage rental you charge realistically based on the rent you pay plus your labor, insurance and other costs and a reasonable net profit?

3. Would you lower your rates if there was ample storage space and as a result it was highly competitive?

As we said, there is no pat answer but we hope there's a steady increase in those you call the $500 boys. The industry needs them. ★ ★ ★

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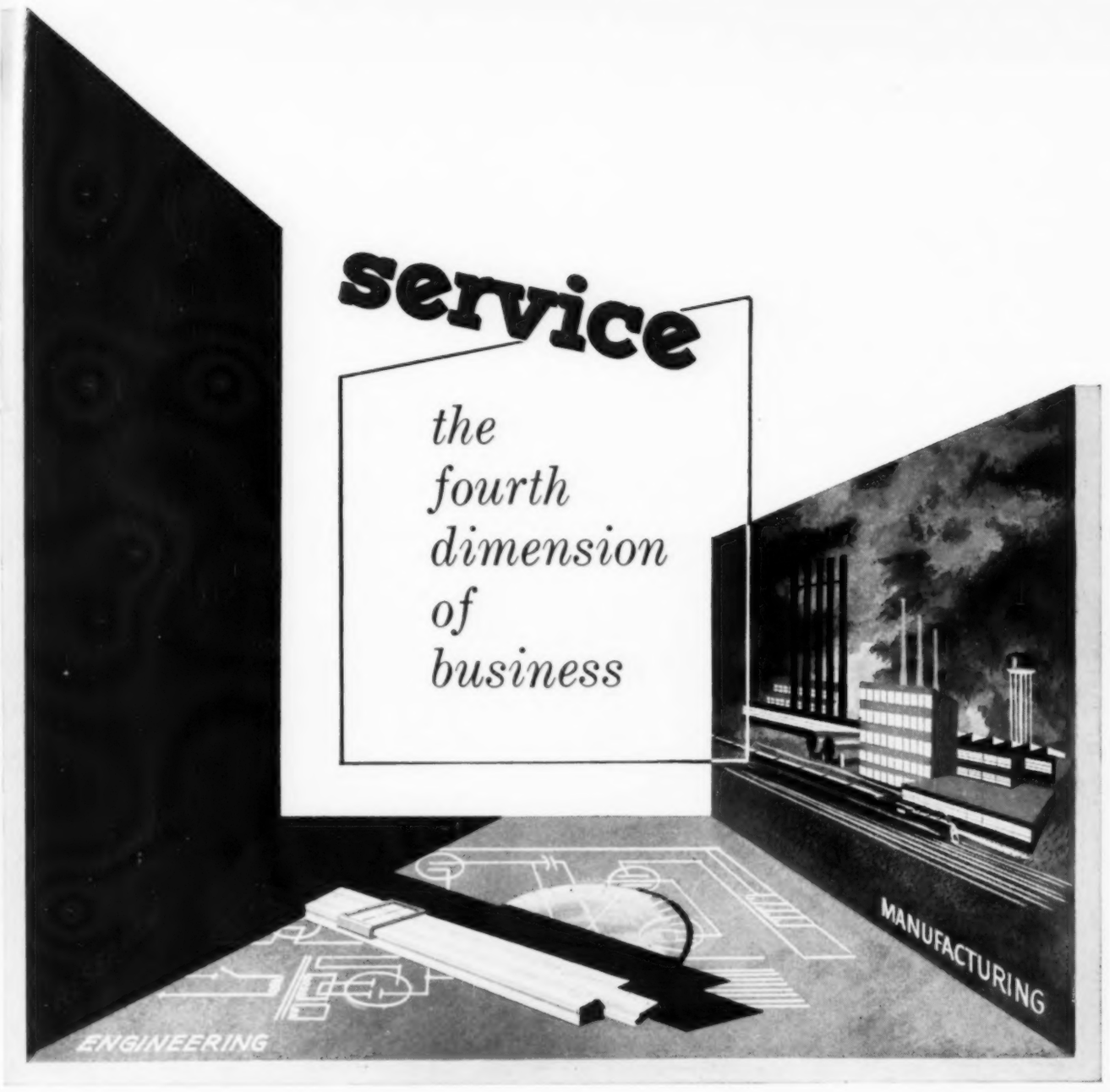

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by C. H. Calhoun,
Vice President, Maintenance and Engineering, National Airlines

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